Vol 3 No 3 UK £1

COMMODORE

COMPUTING INTERNATIONAL

The Independent Commodore Magazine

EXCLUSIVE

Commodore International Art Challenge Winners

Graphics — special issue

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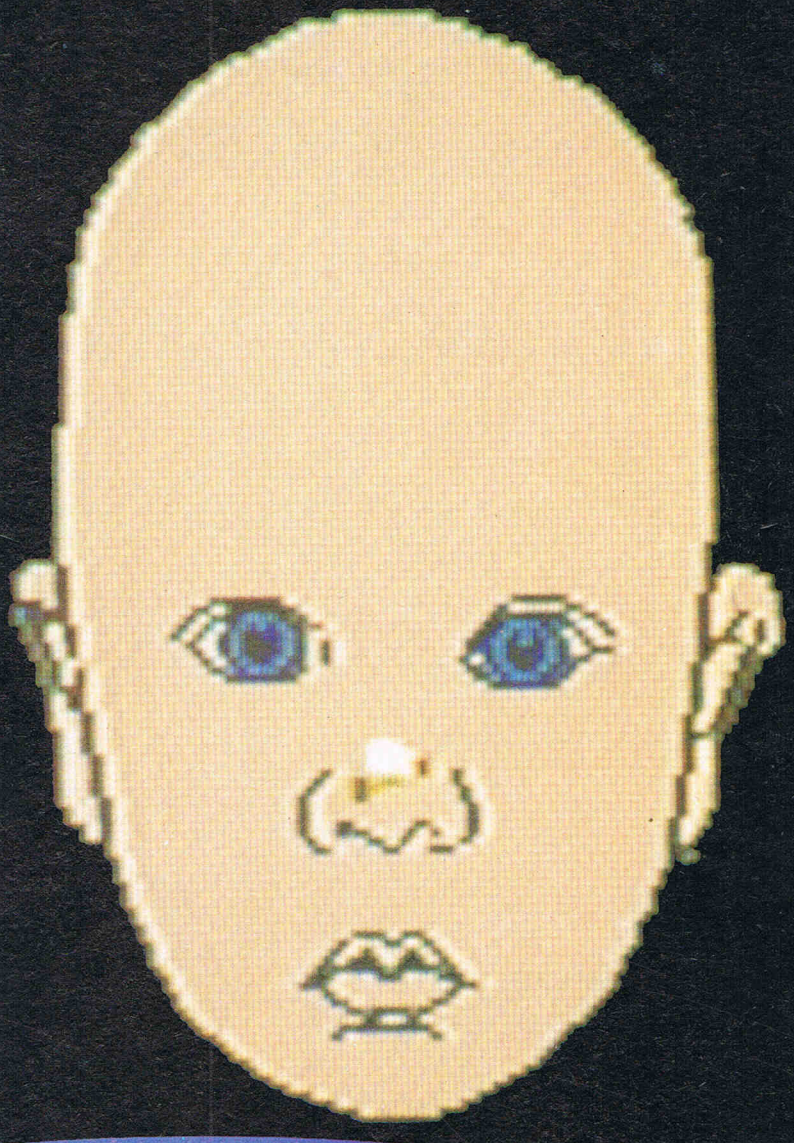
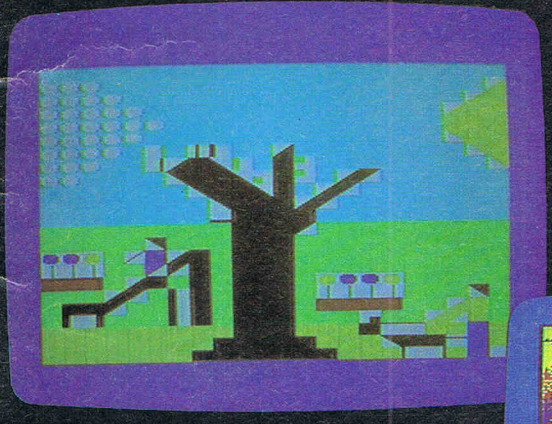
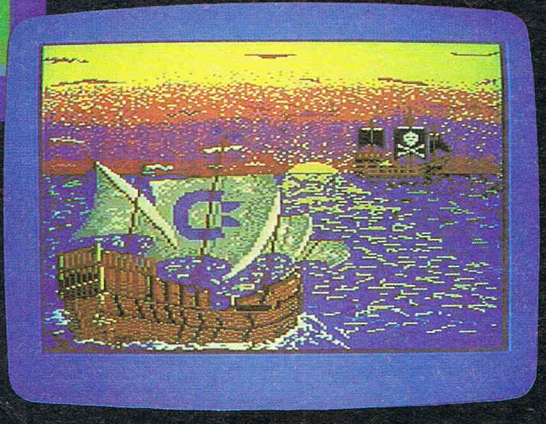
COMPETITION - win loads of software







Commodore and its technicolour dreamscreens

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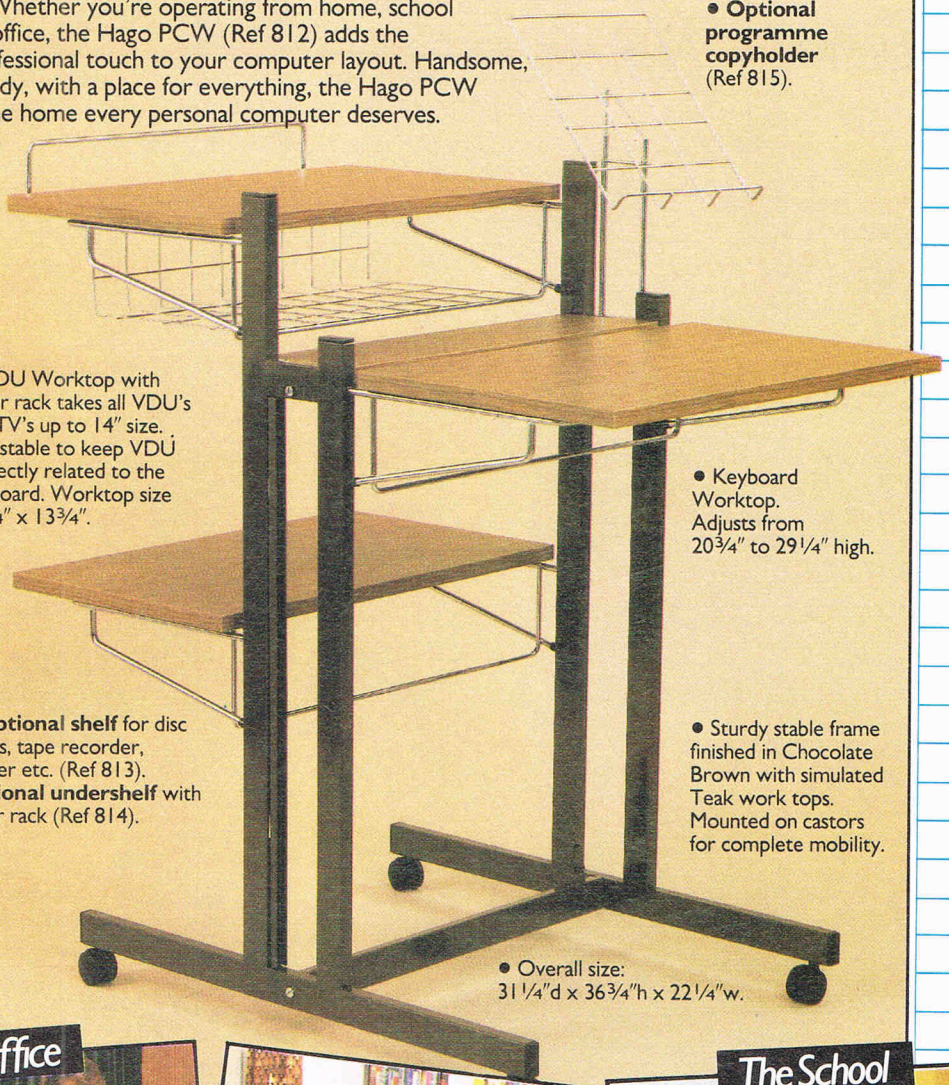

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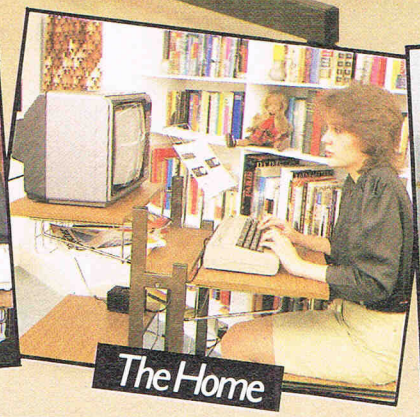

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COMMODORE
COMPUTING INTERNATIONAL
SEPTEMBER 1984

COVER STORY

Commodore's Art Challenge achieved spectacular results. See inside for our exclusive coverage of this international competition.

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NEXT MONTH

Following on from this month's special graphics issue our theme for October is sound, featuring an explanation on how to produce background music for your programs and a survey of available speech synthesisers.

AT LAST REAL MASS STORAGE FOR COMMODORE BUSINESS USERS.

The Sunol Winchester Drive from Small Systems Engineering.

8-92 megabytes of high speed mass storage that can form the heart of a multi-user system, providing PET DOS compatibility and the ability to use a wide range of different micros all at the same time.

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For further information or advice on the major break-through for Commodore business users, phone Simon McCarthy on 01-328 7145 or write to him at the address below.

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Practicorp's software is available at all good computer stores, including selected branches of Boots, W. H. Smith and Menzies. Clip the coupon for details of your nearest stockist.

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Production at Corby underway

The production line is getting under way at the Commodore's new Corby factory, although the official opening is not until Autumn when the VIP, yet unannounced cuts the red ribbon.

The factory has already cost Commodore over £20 million and covers 200,000 square feet. It will eventually have the capacity to produce 3,500 computers a month, but in the initial stages just 2,000 computers – a combination of Plus/4, C16 and 64's – will be manufactured each month.

Commodore hope to have enough of their new machines to cater for the anticipated Christmas demand. A variety of peripherals and software will also be made in the factory, but Commodore's branch in Braunschweig, West Germany will still be responsible for the 8000 series and a number of other products.

Most of the staff have moved up to Corby from Slough, although John Baxter, Marketing Director for Commodore (UK) is expected to depart in the near future. As yet, no replacement has been announced.

There are no plans for the Slough factory and it will eventually cease production.

Commodore postpone show

Commodore's cancellation of the Leeds Show was due to two factors according to Aileen Bradley, Commodore's Retail Marketing Manager.

She explained that as Commodore are moving to their Corby offices in September "a great many staff and resources will be tied up during the month" and so they would be without "a full complement" of staff to help with the show.

In addition, Commodore expect to be extremely busy during the run up to Christmas with production of the new 16 and Plus/4 computers.

15,200 people attended the Commodore Show held earlier this year although Commodore had anticipated that last year's attendence figures of 40,000 would increase this year.

Marks and software

Marks and Spencer are venturing into software and hope to have a selection of titles on the shelves before Christmas.

Adrian Shire, senior selector, told us that they would initially be stocking a number of game titles as well as educational and utility programs for the Spectrum.

If the experiment works well, titles for the 64 will be added to the range. Since the project is still in the early stages, Adrian Shire felt it would be imprudent to give us any more details, but watch this space!

Contact: Marks and Spencer, 40 Bowling Green, London EC1. Tel: 01 935 4422.

Record UK sales

Following news of Commodore's record worldwide sales, we can now report that their UK sales contributed substantially to this record.

UK sales topped the £100 million mark during the last financial year. Howard Stanworth, General Manager, comments: "It confirms that, in revenue terms, we are still the undisputed leader in the British home computer market."

Charitable computing

A computerised Tombola charity stall has raised £2000 for the Sick Childrens Trust 'Home from Home' appeal.

The idea was conceived by Bob Barton of Romik Software and Fiona Anderson, Organiser of the Commodore Show. The stalls were held at the Commodore Computer Show and Computer Fair.

Exhibitors donated blank cassettes, games, books, joysticks, computers – Commodore Computing International donating a large number of back issues.

Patrick Moore and Radio Luxembourg DJ Dave Eastwood helped to attract large crowds and the money raised will go towards providing accommodation for parents of seriously ill children attending the Hospital for Sick Children at Great Ormond Street and St Bartholomew's.

And in a similar vein – strenuous endurance feats such as Banana gobbling, Welly throwing and Egg hurling events featured significantly in the Wickes Associates alternative to the Los Angeles Games – the Waiward Olympics.

The event, held recently at the Thames Ditton Sports and Squash Club, attracted more than 85 clients and journalists, raising more than £400 for the Dedisham School for Autistic Children.

FAST fight for change

FAST, the Federation Against Software Theft, has gained the support of the majority of leading companies and trade associations.

Launched earlier this year to fight software piracy, FAST plan to achieve legislative changes in the Copyright Act so that more criminal remedies are available for software copiers. In effect, the changes should add more penalties to those existing for the manufacture, importation and distribution of pirate copies. FAST also plan to increase awareness of the legal protection already available under existing law.

The Rt Hon Kenneth Baker, MP, Minister of State, Department of Trade and Industry warmly welcomes FASTs' ideas. He says: "The software industry is a very important and quickly growing sector of the British economy. It is already a major contributor to national wealth and employment in this country and it is essential that it should be in a position to protect itself against unlawful copying". He also says that he "would like to assure FAST of my support and encouragement for their valuable efforts in this area."

Contact: FAST, Chancery House, Chancery Lane, London WC2.

Commodore's bronze

Commodore sold enough machines last year (1983) to achieve a third position in the 1984 BIS-Pedder Annual Census of Information Processing.

Their market share rose from 3.6% in 1982 to 6.3% in 1983, a total rise of about £80 million.

Contact: BIS Applied Systems, York House, 199 Westminster Bridge Road, London SE1.

Dealer of the year

The Commodore dealership of the year has been won by the Birmingham-based Camden Computers.

To qualify for this title, Camden Computers sold more than £800,000 worth of Commodore equipment before the year ending June 1984.

Camden Computers was formed in 1971 and has been a Commodore Approved Dealer since the mid '70s. They have over 1000 user-bases ranging from Cornwall to Scotland.

We've got the TALENT

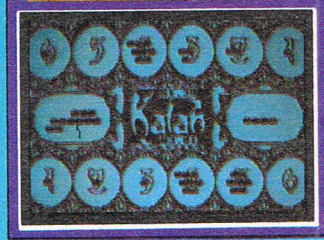
and our games prove it!

Amazing graphics, fast and furious action, challenging strategy, compelling adventure – this first wave of games from TALENT has got the lot!

Written by professional computer scientists using powerful new programming techniques (which leave machine code standing), these games have pushed home micros to the very limit.

Kalah

ARCHIPELAGO



KALAH

One of the oldest games in the world! Originally played by Bedouins using pebbles and holes scooped in the desert sand, this strategy game has absorbed the mind of man for thousands of years. Superb graphics and music, with a choice of levels and depth of search. Easy to learn, fiendishly difficult to beat!

Commodore 64 Cassette £7.95 Disk £9.95

COMMODORE CASSETTES ARE 'FAST LOAD'

LASER REFLEX

A new angle in alien zapping! Against a brilliant backdrop of stars, you must defend your asteroid base from wave after wave of swooping mutating starships. Your defence – a powerful laser deflected against a giant mirror. How long can you hold out before your defences crumble?

BBC Model B Cassette £7.95
Electron Cassette £7.95

COMMODORE SOFTWARE WILL SHORTLY BE AVAILABLE ON COMPUNET

ARCHIPELAGO

Dare you venture into the ancient undersea labyrinths which link the islands of the Archipelago? Fabulous jewels await you there – but the guardians of the treasure mark your every move, waiting to deal a swift and terrible vengeance. How long can you survive?

A fast-moving, action-packed game with brilliant graphics, animation and music.

Commodore 64 Cassette £7.95 Disk £9.95
(joystick needed)

WEST

A compulsive adventure game set in a ghost town in the Wild West. Your task – to flush out a gang of bank robbers and retrieve their loot – with only your trusty steed and your six-shooter to aid you!

Test the speed of your draw, your skill at cards, your powers of survival!

The first of a stunning series of adventure games from Allan Black, played in real-time.

Commodore 64 Cassette £9.95 Disk £12.95
BBC Model 'B' (text only) Cassette £7.95
Electron (text only) Cassette £7.95

PANORAMA (H)

An outstanding graphics package for the Commodore 64. Features include: free-hand sketches, circles, ellipses, block move, copy and reverse, magnification choice of cursor, joystick or key control. PLUS texture definition and texture and colour fill. PANORAMA (H) uses the full colour facilities of the Commdore 64.

Commodore 64 Cassette £17.95 Disk £19.95

The programme is menu-driven and comes with a comprehensive illustrated instruction booklet.

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SOFTWARE FROM SCOTLAND

Talent games should shortly be available from your local software retailer – or post off the coupon now.

Curran Building, 101 St James Road
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TO: TALENT COMPUTER SYSTEMS FREEPOST (no stamp required) GLASGOW G4 0BR

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COMMODORE 64	Quantity		
PANORAMA (H)	—	Cassette	(£17.95) ☐
PANORAMA (H)	—	Disk	(£19.95) ☐
ARCHIPELAGO	—	Cassette	(£ 7.95) ☐
ARCHIPELAGO	—	Disk	(£ 9.95) ☐
KALAH	—	Cassette	(£ 7.95) ☐
KALAH	—	Disk	(£ 9.95) ☐
WEST	—	Cassette	(£ 9.95) ☐
WEST	—	Disk	(£12.95) ☐

BBC MODEL B	Quantity		
LASER REFLEX	—	Cassette	(£ 7.95) ☐
WEST (text only)	—	Cassette	(£ 7.95) ☐
ELECTRON			
LASER REFLEX	—	Cassette	(£ 7.95) ☐
WEST (text only)	—	Cassette	(£ 7.95) ☐

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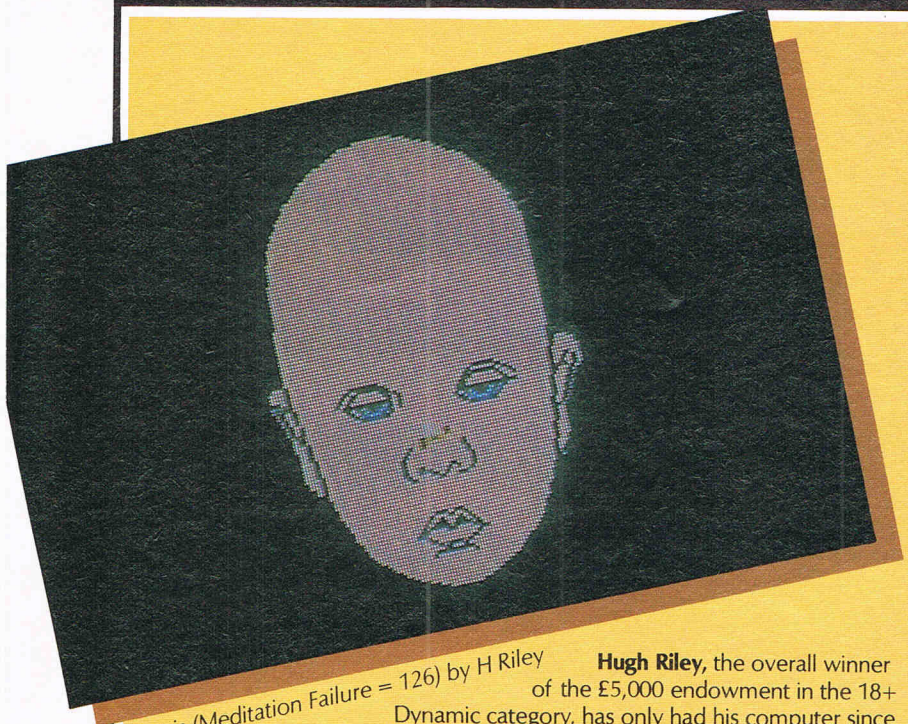
Please allow up to 28 days for delivery. We shall not bank your remittance until your order has been despatched
Dealer enquiries welcome. Contact Veronica Colin on 041 552 2128

Commodo technicolour

We are pleased to be able to share with our re our exclusive coverage of Commodore's Intern announcing the results Sue Pearce talks



Louis (Meditation Failure = 126) by H Riley

Hugh Riley, the overall winner of the £5,000 endowment in the 18+ Dynamic category, has only had his computer since Christmas. And his winning entries Louis (Meditation Failure = 126) and Obsessiveness were his first attempt at this kind of programming. A simple, yet extremely effective entry, Louis shows the face of a baby, his eyes following the path of a fly. Don't blink or you'll miss its grand finale – as the fly lands on Louis' nose, out flicks a long red tongue and gobbles it up! Slightly reminiscent of the mutant baby in the wonderfully awful TV epic 'V'.

Hugh Riley explains where his ideas came from. "The idea called for a face. It's actually the face of my son taken from a photograph. I suppose the idea for the fly had just been buzzing around my head." GROAN!

"The programs are complex within their simple limits," continues Hugh. "The Commodore allows you to move sprites, but you still have to define the blocks of pixels to be moved."

I didn't have the opportunity to see Hugh's other entry, Obsessiveness, which involves the repitition of the word Obsessiveness.

"The screen was 40 characters wide," commments Hugh. "Therefore I needed a word 13 characters long – Obsessiveness was the obvious choice."

Producing a work of art using a computer may still seem futuristic to some, but watercolour and oil painting were declared equally innovative in their time.

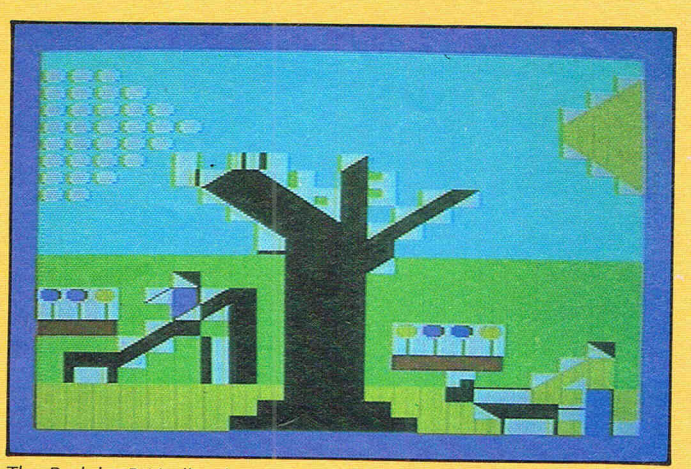
Commodore's International Art Challenge has brought to the public's attention the possibility of micro technology in image making.

The aim of the challenge was to open up an unexplored area to home computer owners and to demonstrate that new technology can be visually and artistically exciting as well as indispensable for use in education and solving practical problems.

Incentives to enter included a £5,000 endowment towards enabling the overall winner to study computer art at the establishment of his, or her, choice anywhere in the world in addition to thousands of pounds worth of Commodore equipment to be won.

The first art challenge of its kind, it stimulated a favourable response. Two hundred entries were received – perhaps not as many as expected, but the timing of the challenge meant that many potential competitors were under pressure from school exams.

Entries were judged for technical as well as artistic excellence by a panel of judges which included Professor Brian Allison, world president of the International Society for



The Park by R Hadland

Nine-year-old **Richard Hadland** produced a striking mosaic-type picture of a park which earned him first prize in the Under 12 Still category.

Richard uses a computer at school, but programmed his entry on his Dad's VIC 20, which he has been experimenting with on and off for about a year.

Art is a subject Richard enjoys and he has tried his hand at computer graphics before. He says: "My Dad told me about the competition. I thought that I could make a tree and I decided to make it a park with a friend and a slide."

It took Richard just three hours to produce his entry, with perhaps just the tiniest bit of help from his Dad with the actual program. He's planning to invest in a 64 with part of his £1,500 prize money – I wonder if Dad will be allowed to use it?

re and its dreamscreens

aders some of the impressive winning entries in ational Computer Art Challenge. In addition to to some of the entrants and Judges

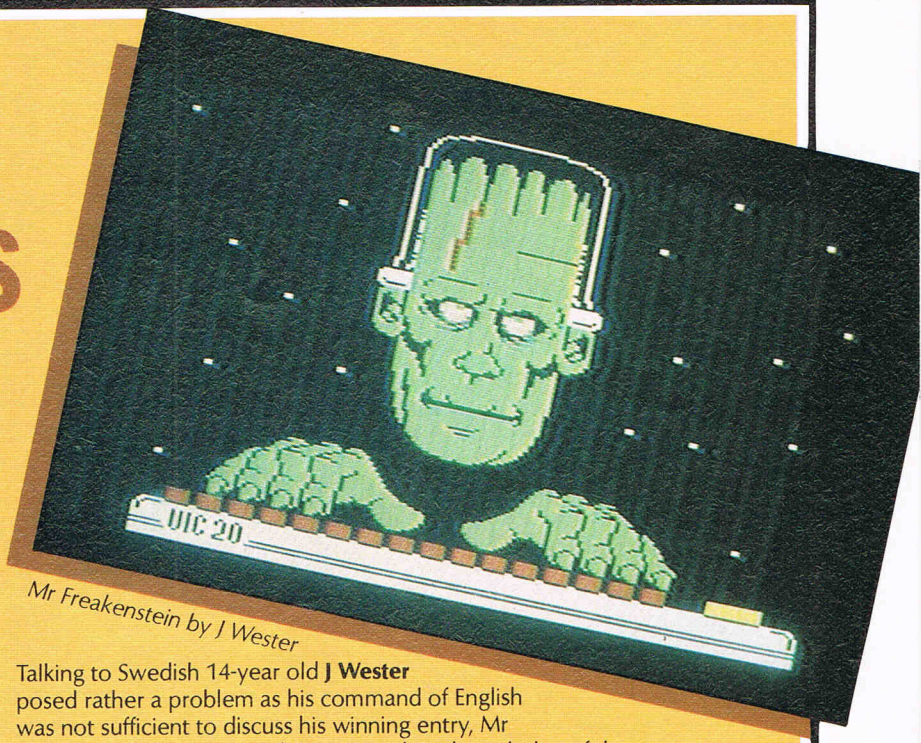
Education through Art, Commodore's marketing manager John Baxter, Paul Brown, editor of Page – the journal of the Computer Arts Society, and artist Tony Hart.

The winnng entries were on public display at London's Hamilton Gallery from September 3-5. Unfortunately we didn't have enough notice to announce this earlier.

I didn't envy the judges the task they performed in singling out the winning entries. At our photographic session I saw only a small sample of the entries and the standard was impressive. (I also don't envy the considerable hours put in by the judges waiting for each individual entry to be loaded – not that Commmodore ever encounter problems with their disk drives and cassette units. Cough! cough!)

My personal favourite has to be Mr Freakenstein which was voted the overall international winner. (I must have good taste after all!) A Swedish entry by 14-year-old J Wester, it shows Freakenstein at his VIC 20 keyboard, fingers moving up and down while the eyes blink and an evil sneer appears on his face.

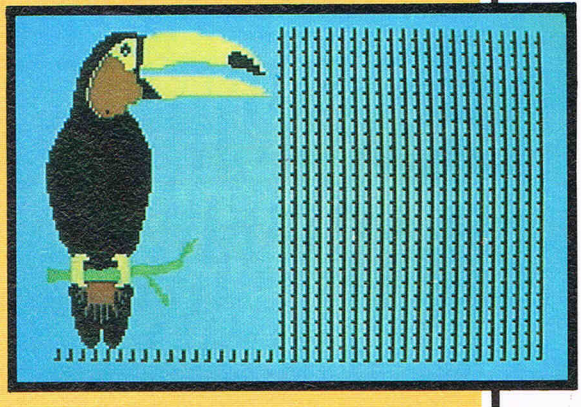
All of us here at CCI would like to add our congratulations to the winners. If you missed your chance to prove your artistic talents this time, don't worry. Commodore are planning to repeat the challenge next year.



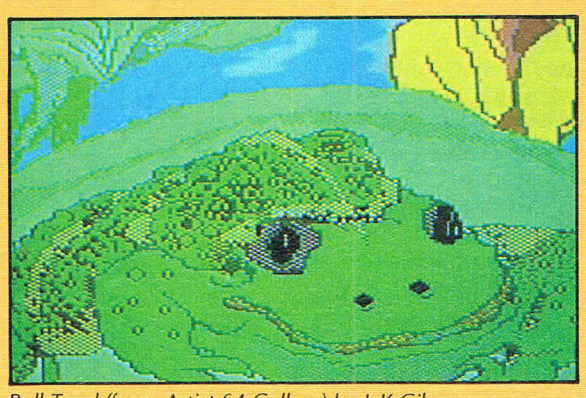
Mr Freakenstein by J Wester

Talking to Swedish 14-year old **J Wester** posed rather a problem as his command of English was not sufficient to discuss his winning entry, Mr Freakenstein. However, it far surpassed my knowledge of the Swedish language! Due to this language problem I will also have to refer to him as Mr Wester as when I enquired about his first name, he replied: "I don't spell in English". Anyway, it is pronounced something like 'Yohanik'.

His entry, Mr Freakenstein, won him first prize in the 12-17 Dynamic category and gained him the title of International winner. Mr Freakenstein was actually the result of a misinterpretation. Mr Wester says: "My first thought was to do Einstein. My father thought I meant Frankenstein, so I decided to work on that idea. "It wasn't very easy," he continues, "But it also wasn't hard. It took two days to develop the idea and then I wrote a program so that I could generate my characters."



Toucan by M & A Kontowski



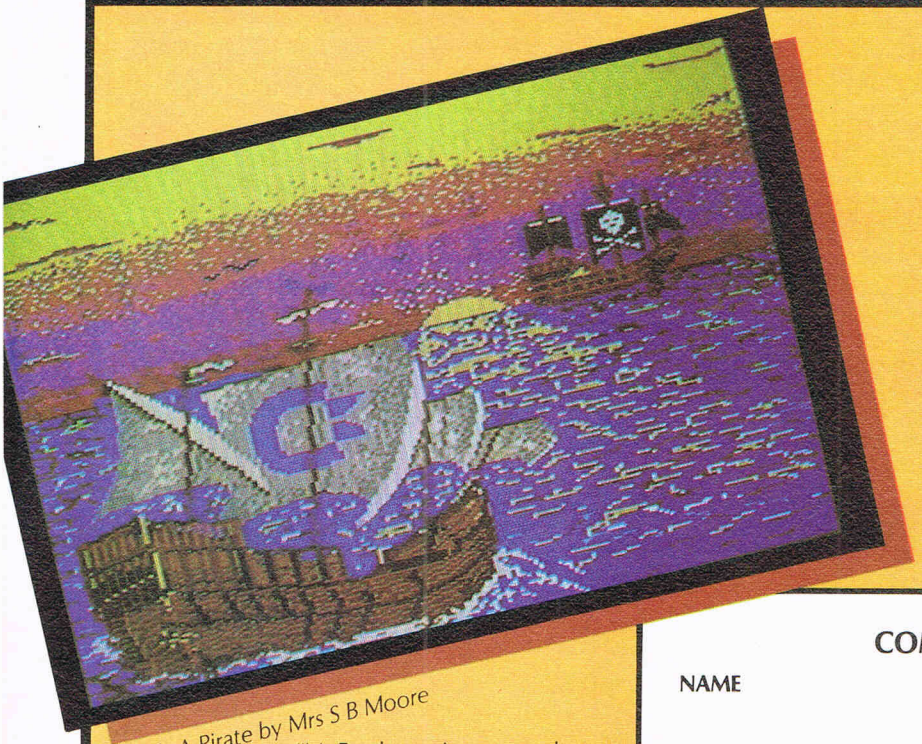
Bull Toad (from Artist 64 Gallery) by L K Gibson

John Baxter, marketing manager of Commodore UK, feels that the Commodore International Computer Art Challenge has been a huge success. He comments: "The standard of entries was extremely high, especially considering that it was the first ever competition of this kind for home computer users, and that no extra add-on software was permitted in creating the graphics."

As part of the judging panel for his knowledge of the technical expertise of each entry, Baxter was involved in the difficult task of selecting the final winners. "It was a task which stimulated much discussion amongst the judges," says Baxter. Despite the number of outstanding entries, the judges were unanimous in their decisions.

Baxter confirms: "Louis (Meditation Failure = 126) was immediately obvious as our overall winner. It stood out head and shoulders above the rest particularly for its high degree of originality and creativity. It also exemplified the excellent standards of technical expertise in the blinking eye which, although appearing to be a simple movement, does in fact require great skill to achieve.

GRAPHICS



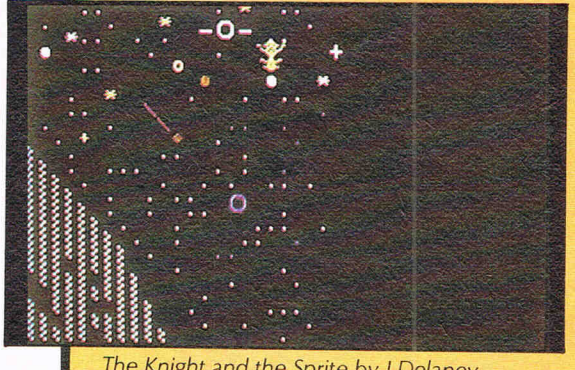
Catch A Pirate by Mrs S B Moore

"Mr Freakenstein was another clear winner," he continues. "It demonstrated probably the highest level of excellent and accurate imagery I have seen performed on a VIC 20 with no memory expansion at all."

Baxter concludes: "The Commodore International Art Challenge has shown that Commodore's home computers have capabilities in fields which are only now beginning to be explored – even the youngest of children are capable of using their computers to create what we believe will be the art of the future."

Professor Brian Allison, world president of the International Society for Education through Art, was concerned mainly with the educational value of the competition.

He says: "I was encouraged by the number of demonstrations of computer usage in art and design activity in schools. It showed the potential of young people to use the computer in an aesthetic way and adds to the range of techniques available to artists for expressive purposes."



The Knight and the Sprite by J Delaney

Allison confirmed that the standard of entries was high and expressed his delight in the fact that entries were received from women.

"I was particularly taken by an entry from a 10-year-old girl," comments Allison, referring to The Knight and the Sprite by Joanne Delaney. "It was a lovely poem and the image making was good too." According to Allison, school computers tend to be hogged by the boys and he feels that these results will encourage more participation from girls.

In any future competitions of this nature, Allison would like to see a category for school entries. He says: "Given the time of the year when the challenge was set up, 15-18 year olds were all involved in exams. Many were away from school, so a computer was required at home.

"The timing didn't allow teachers to become involved. With a category for school entries, an educational venture could be fitted into the regular school program."

COMPETITION RESULTS

NAME	TITLE	PRIZE (£'s worth of Commodore equipment)
(Under 12 Still)		
1st R Hadland	The Park	1,500
2nd N Lynn	Reach For The sky	1,000
3rd J Charlesworth	3 Program Pictures	700
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The overall winner of the £5,000 endowment was H Riley in the 18+ Dynamic category, for Louis (Meditation Failure = 126) and Obsessiveness.

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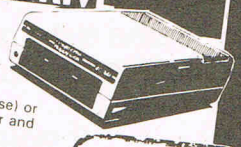

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Computerama 64

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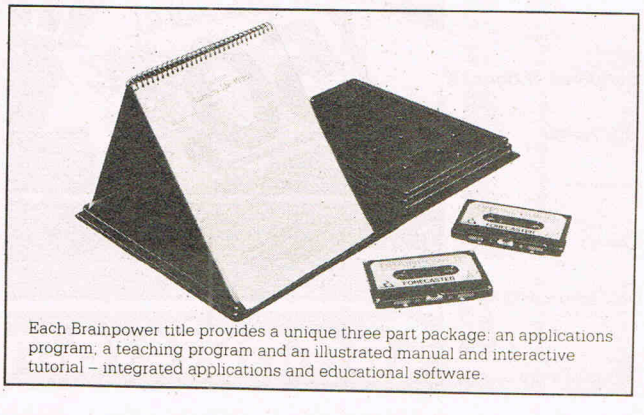

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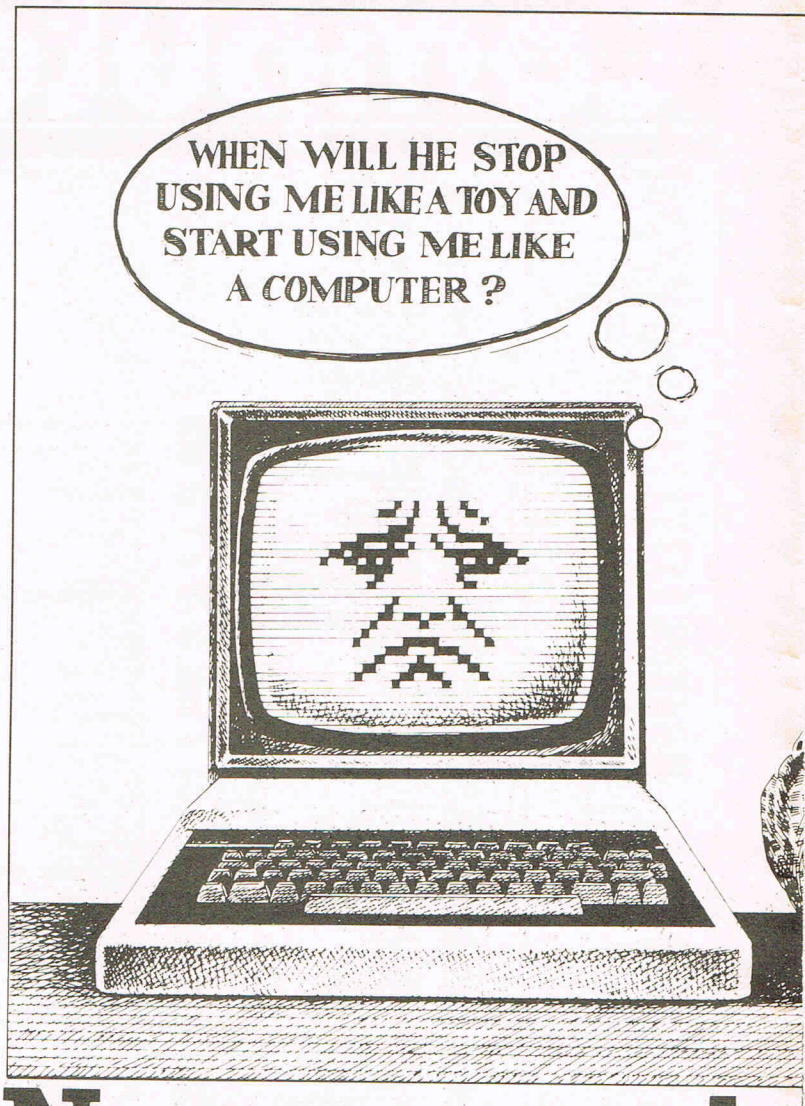

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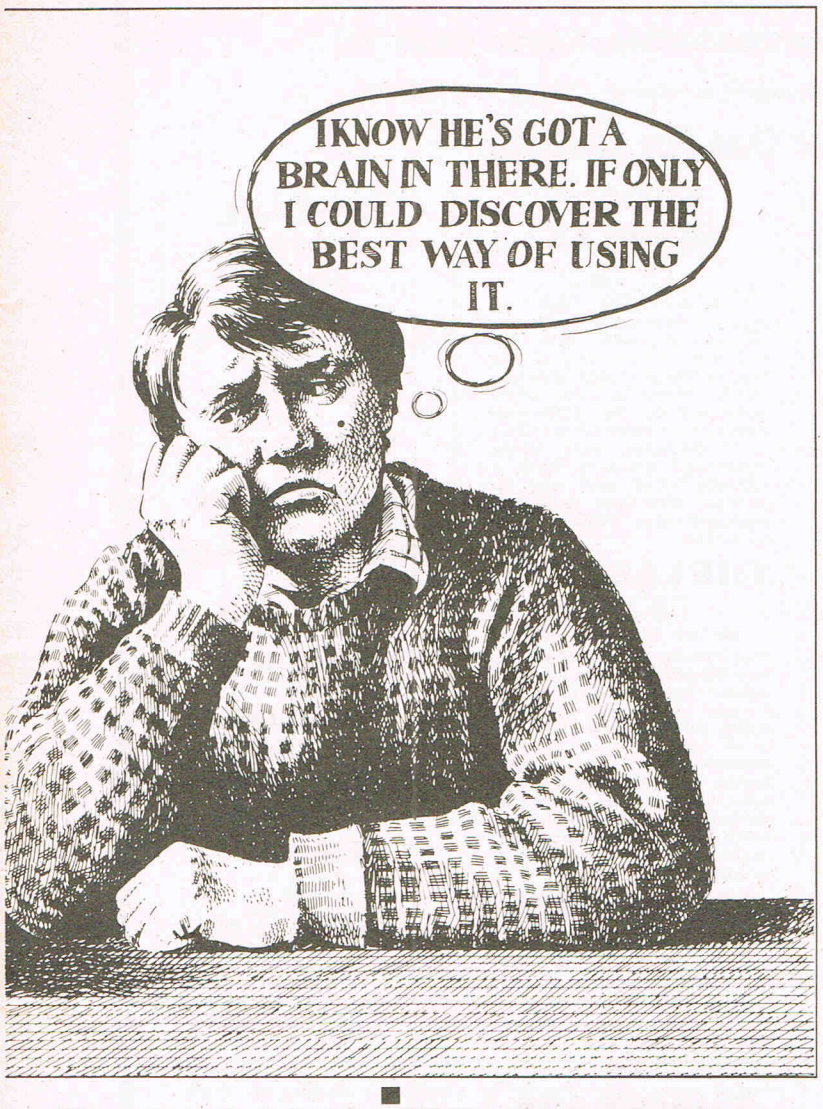

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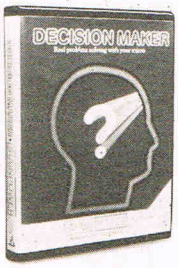

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Has true 3D (multipaging) facility, and histogram features. Versions for Commodore and Epson printers. This is a very powerful and much liked spreadsheet. Very highly recommended. Single page version £47.50 (cartridge).

MICRO ASSEMBLER
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Best of the lot. If you're into machine code — or working that way — this is the one to get or save your pennies for. Features 3-pass assembler, unlimited labels, source files can be linked, monitor, full screen editor, disk or tape operation. Plus AUTO, DELETE, FORMAT, FIND, NUMBER, DISASSEMBLE, OUT and TABLE. Monitor has standard TIM commands plus hunt, transfer and disassemble.

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Combines the features of a powerful assembler with a number of toolkit programming features. An ideal program development aid. Includes AUTO line numbering, FIND string, CHANGE string, DELETE line range, TYPE to inspect or print a file without loading it into memory, GET source text files, PUT outputs source files to disk, DO executes first line, LIST source file, RENUMber lines, JOIN program files, SCROLL multiple viewing facility, CBM code selection, ASCII code selection, RBAS reset, SIZE of file and start/end load address, SETBRK and CLRBRK to insert and remove

KOALAPAD
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Touch tablets you can use not only for creating spectacular graphics, but also for musical, LOGO and educational uses. Comes complete with KoalaPaint cartridge which permits all those fantastic graphics facilities — commands include zoom, copy, colour swap, draw, lines, rays. Save pictures on disk and call these up from BASIC to use in your own programs! Programmer's Guide (disk £13) is useful. Logo Design Master (disk £30), Spelling I (disk £30), Colouring Series I — Geometric Designs (£25) are some of the other support programs available but it's easy to write your own.

MICRO-SIMPLEX
£178
(Micro Simplex) — disk

If you're in business and need to maintain an accurate audit trail and VAT record, this is the program for you! Will save you literally hours of work. Fully recognised by the authorities. Suitable for schemes A to F. This is a specialist, very highly developed product from a software house who offer an excellent after-sales service to registered users. Demo available on deposit.

THE LAST ONE
£97.50
(DJ 'A1' Systems) — disk

Programming aid that frees you from the graft if you're thinking of writing specific applications. Creates stand-alone error-free coding in standard BASIC. Input is in the form of one-line descriptions defining, in plain English, the user's intention. This word 'flowchart' act as basis of computer's questioning session which leads. Programs you create can be for any application. Highly recommended.

CODEWRITER
£85
(Dynatech) — disks

Database design system like TLO. Easier to work with but marginally less powerful. Disk 1 features data entry generator, disk 2 carries report and menu generator. Very flexible.

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(Precision) — disk

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This is so good the authors think you can learn 'the ropes' as far as instrument control and flying are concerned. Accepting the limitations on the graphics side — nevertheless outstanding in terms of personal computers — the simulation is quite excellent. Expensive but it's the best one for the 64 by far . . .

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COLOSSUS CHESS
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(CDS) — cassette

This is the best of the chess programs available for the 64. Cursor controlled piece movement. Turn by turn move listing and assessment. Multi levels of play. Game replay feature. A must if only to learn to play chess!

BOOKS

There are some 60 or so books specifically about the Commodore 64. We have a full list (50p) with a description of each. Included in the list are many other books of interest to Commodore 64 users. We can supply any book at cover price plus 50p each towards P&P.

ANATOMY OF THE 1541
£14.95

Really excellent book for those keen to get inside their 1541 disk unit. Absolutely everything you need to know — includes ROM listings, descriptions of 1541 use, use of programs such as COPYALL.

PRICES CORRECT AT TIME OF GOING TO PRESS. Let us quote you if you manage to find lower!! Items marked with an asterisk (*) are available at £5 less *while stocks last*.

Graphic generation

Confused by the multitudes of graphics aids available? Sally Wood investigates this ever increasing sector of the market

Computer graphics have changed the face of the film industry. Special effects created with the aid of computers have made possible cinematic extravaganzas such as Star Wars, Tron and Return of the Jedi all multi million blockbusters.

Imaging techniques have also made significant changes to scientific research procedures. Computer graphics can be used in the design of new drugs, in genetic engineering, for improving and interpreting images sent back by space satellites and even for the examination of bone structures before surgery.

The potential uses for computer graphics must be enormous and no doubt in the next few years they will increasingly become part of our everyday lives. However, science and film entertainment apart, what about down to earth personal computer use of graphics?

The average computer programmer is not going to start designing graphic programs to plot the path of particles in nuclear energy research, nor is he going to start creating the special effects for the latest Spielberg film.

What he or she will be doing, is to utilise the myriads of proliferating graphic packages for applications such as business, education, remedial teaching, in personal programs and even for the aesthetic pleasure of designing amazingly clever pictures for contests like the Commodore International Art Challenge, the winning entries of which are featured in this issue.

Lines, circles, shapes, close ups, plotting lines, up to fifty colours (achieved by combining Commodores 16 colours), squares, filling in of shapes, different textures can all be used in creating graphic images on the television or monitor screens either using the preprogrammed graphics programs or programming your own using the utilities which add extra graphics commands to BASIC.

Most of the packages are for the 64 and this bias is due to the incredible graphics potential of that computer. It has five graphic modes altogether. Two of these, the high resolution bit mapped graphics and multicolour text modes, can be mixed with text.

Normal text, extended background colour text and multicolour bit mapped graphics mode are the other three modes and using these, foreground and backgrounds can be defined on screen. There are also four layers of animation and eight sprite layers to play around with!

No wonder there are such brilliant graphics in 64 games like Alice in Videoland and Aztec Challenge by Audiogenic or Loco by Alligata. Even the VIC 20 has a relatively good graphics capacity and games like Pharoahs Curse by Hesware prove it.

We have put together a list of a selection of available graphics packages which will give you a good idea of what is available.

It is not possible to categorise the packages as each one concentrates on different aspects of computer graphics. Some require peripherals such as graphics boards, light pens and joysticks.

There is much room for development and improvements in the field of computer graphics and so it will undoubtably become even more exciting than it is already. We hope that your creative interest has been stimulated – creating and designing graphical imaes on a computer will, undoubtably, produce pleasing results.

GRAPHICS TABLETS

Audiogenic's Koalapad was used to produce the above picture of a tiger

PEACOCK COLOUR SYSTEM

This graphic board provides an eight-colour graphics facility for the 64 and VIC 20 although it uses a RS 232 interface and will require a suitable interface. Code sequences are used to control direct cursor positioning and vector drawing. Graphics and text can be mixed on the two separately controlled screens. Unit comes complete with enclosure power supply, colour card and flying cables and costs £850.

Contact: IJJ Imports, 1 Cardigan Road, Marlborough, Wilts. Tel: 0672 52818.

STROBE GRAPHICS SYSTEM

Raw complex data can be transformed into bar and pie charts, curves or isometrics in a variety of colours with the Strobe 100 graphics plotter and software package. The plotter costs £299 and the software is aimed at the Commodore 8032 and the 4040 disk drive. An intelligent serial box is available and costs £162. The 64 or VIC 20 will need a parallel interface to operate with the plotter.

Contact: Data Efficiency, Finway Road, Hemel Hempstead. Tel: 0442 60155.

GRAPHICS

KOALAPAINTER

High resolution graphics can be designed on screen using the Koala Pad touch tablet and accompanying graphics program. Commands include drawing lines, framing, circles, manipulating objects on screen, enlargement and any pictures created can be utilised in personal programs. Complete package for the 64 retails at £89.95.

Contact: Audiogenic, PO Box, Reading, Berks. Tel: 0734 664646.

GRAFPAD

The digitising tablet plus the pen can be used with various graphics programs such to create high resolution graphics. Software will enable the user to design pictures, trace the outlines of pictures or graphs and do free hand drawings in a choice of red, green or blue colours. The pad is for the 64 costs £125.

Contact: British Micro, Penfold Works, Imperial Way, Watford, Herts. Tel: 0923 48222.

LIGHTPENS

DATAPEN

Two drawing programs plus an introductory program accompany this lightpen which can be used to design programs as well as pictures. With the Colour-Draw program, pictures can be created using any of the Commodore characters and colours and, by utilising the Hi-Res draw, programs can be used to invent high resolution graphics using several drawing styles. The package costs £25 and is 64 compatible.

Contact: Datapen Microtechnology Ltd, Kingclere Road, Overton, Hants. Tel: 0256 770488.

PIXSTIK

With the aid of a lightpen and paintbox software, Pixstik can be used to design graphics on screen. Features include 16 colours, four Stik Modes, various line and shape modes which can be finished in various styles; block, speckled or filled in. Graphics can also be animated. Retails at £29.95 for the 64 and includes a lightpen and software.

Contact: Computapix Ltd, Gores Road, Kirkby Industrial Estate, Liverpool. Tel: 051 547 2741.

GRAPHIC UTILITIES

ACOS+

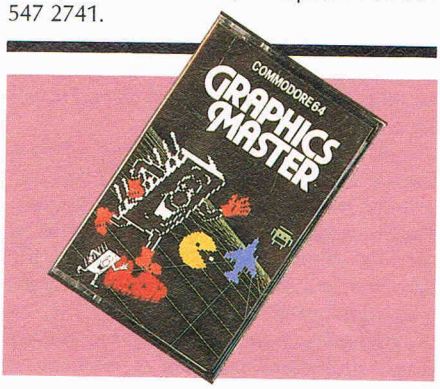
This utility program makes the 64's unique capabilities available to anyone through a collection of 36 advanced BASIC commands. Graphic features included in the program are simplified sprite movements, sprite collision detection and graphic commands. Available on cassette for £8.95.

Contact: Melbourne House, Castle Yard House, Castle Yard, Richmond. Tel: 01-940 6064.

GRAPHIX IV

A Machine Code utility adding 16 graphic commands to Commodore 64 BASIC. The commands enable High Resolution Graphics and user-defined characters to be accessed easily from Basic. Features include split screen option, mixed text and graphics facility plus plot, draw, paint and colour commands. Available on cassette for £9.95.

Contact: Zipprint, 96 Bournemouth Road, Parkstone, Poole, Dorset. Tel: 0202 737000.



GRAPHICS MASTER

Both user and defined characters and sprites can be created at the same time and then saved onto tape or disk. Commands include edit functions, character scrolling, inverting and character rotations. Graphics Master is for the 64 and sold on cassette for £7.50.

Contact: Mr Chip Software, Dept CC, 9 Caroline Road, Llandudno, Gweynedd. Tel: 0492 79026.

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GRAPHICS

ROLF HARRIS PICTURE BUILDER

Pictures have to be built up in block from using either the standard Commodore character set on the 64 or a set of specially designed characters. Sixteen colours can be utilised and shapes can be multiplied, replaced and used in personal programs using a joystick. The program is on cassette for the 64.

Contact: Commodore International, 675 Ajax Avenue, Slough, Berks. Tel: 0753 73638.

VIDEO BASIC

This package can be used by software developers to create, among other things, high resolution, multicolour, sprite and turtle graphics aon the 64. The memory can manage multiple graphic screens and there are game features for sprite collisions, lightpens and joysticks. This development package comes on disk for £42.

Contact: Adamsoft, 18 Norwich Avenue, Rochdale, Lancs. Tel: 0706 524304.

CADPAK

A lightpen based tool for computer aided designs and drawings. High resolution graphics can be completed on two screens. Commands include freehand drawings, rays, boxes, circles and copying areas of screen to other areas. Text can be inserted and intricate detailed objects such as electronic circuitry can be defined and printed. Available on disk for the 64, the package costs £35.

Contact: Adamsoft, 18 Norwich Avenue, Rochdale, Lancs. Tel: 0706 524304.

GRAPHICS DESIGNER

Design package for the 64 capable of producing high resolution graphics on screen by using a keyboard, joystick or lightpen. Circles, boxes, triangles, ellipses and lines can be used in the designs and text can be added to any pictures. Pictures can also be combined for display purposes with the Slide Show feature. Graphics Designer comes on disk for £19.95.

Contact: Adamsoft, 18 Norwich Avenue, Rochdale, Lancs. Tel: 0706 524304.

GRAPHIX 64

A Machine Code utility with over 20 hi-res commands enabling points to be erased or plotted, lines drawn or areas on screen to be filled or erased. Text characters can be erased and a text window allows standard and high resolution screens to be displayed simultaneously. Sold on either cassette or disk for £11.50 and £13.50 respectively.

Contact: Supersoft, Winchester House, Canning Road, Harrow. Tel: 01 861 1166.

BC BASIC

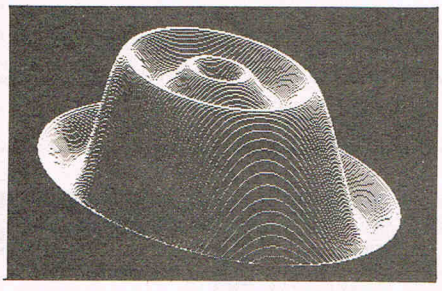
Commands and functions have been added to the BASIC language in BC Basic to enable both novice and advanced programmers to utilise the four main graphic levels on the 64. These are standard characters, user-defined characters, high resolution characters and sprites. Retails on cartridge for £57.50.

Contact: Kuma Computers, 12 Horseshoe Park, Pangbourne, Berks. Tel: 07357 4335.

ULTRABASIC 64

Adds 50 powerful commands to Commodore BASIC including high resolution, multicolour and turtle graphics, dots, freehand drawing, circles, boxes, rotations, sprites. Retails at £14.95 and £19.95 for cassettes and disks respectively.

Contact: Adamsoft, 18 Norwich Avenue, Rochdale, Lancs. Tel: 0706 5244304.



GO SPRITE

With Go-Sprite, the 64's sprite capabilities can be used. Up to 32 sprites can be drawn on the screen and then moved around, coloured with any of the 16 colours, overlapped, copied and enlarged. Joysticks, lightpens or the keyboard can be used to control the cursor. All sprites created can be animated. It costs £10 on cassette.

Contact: Mirrorsoft, Holborn Circus, London EC1. Tel: 01 353 0246.

SCREEN GRAPHICS

Adds 20 graphic commands to the 64's BASIC including sprites, high resolution and multicolour graphics. The program also contains Machine language routines, a demonstration program and a tutor written in Screen Graphics 64 BASIC.

Contact: Adamsoft, 18 Norwich Avenue, Rochdale, Lancs. Tel: 0706 5244304.

PAINTPIC

Graphics program for the 64 with pen, brush and text painting modes. It utilises 16 colours, a number of shapes and blocks can be created and then copied, rotated or mirrored. Paintpic comes on cassette and costs £19.50.

Contact: Kuma Computers Ltd, 12 Horseshoe Park, Pangbourne, Berkshire. Tel: 07357 4335.

GRAPHICS EDITOR

The three Editor functions in this program help create user defined characters and sprites on the 64. The Character Editor redefines characters which can then be used by the Screen Editor to create pictures. Sprites can be designed with the Sprite Editor. A display window allows multiple sprite images to be composed and animated sequences to be seen. The cassette version is priced at £14.99.

Contact: Romik Software, 272 Argyll Avenue, Slough. Tel: 0753 71535.

TURTLE GRAPHICS

Turtle Graphics, for the VIC-20, is a computer language combining features of LOGO and PILOT. The 30 different commands include commands for colour, sound, motion, logical conditions, calculations, branching and subroutines. The user learns to program while painting pictures using the VIC 20's graphics and colour potential.

Contact: Hesware, Thomson House, 296 Farnborough Road, Farnborough, Hants. Tel: 0252 543333.

GRAPHICS DESIGNER

Written in Machine Code, this program enables character sets and sprites to be designed in either a standard bit map mode or a multicolour mode. In addition 'windows' consisting of 32 standard characters can be defined, enabling large objects to be drawn. Both keyboard and joysticks can be used to control the program which is available on cassette for the 64 at £9.95.

Contact: Supersoft, Winchester House, Canning Road, Harrow. Tel: 01 861 1166.

PANORAMA H

This utility can create pictures with high resolution graphics for use in personal programs. The cursor is joystick controlled and commands include plotting points, drawing lines, defining blocks of texture, enlargement and animation. Cassette and disk versions for the 64 cost £17.95 and £19.95 respectively.

Contact: Talent Computer Systems, The Curron Building, 101 St James Road, Glasgow. Tel: 041 552 2128.

TONY HART ART MASTER

Colourful line drawings can be created on screen using either a keyboard or joystick. Sixteen colours can be utilised on one screen and a second screen can be used to temporarily store pictures. Disk and cassette versions are available for the 64 and will cost around £11.

Contact: Commodore Internationa, 675 Ajax Avenue, Slough, Berks. Tel: 0753 73638.

COMMODORE 64 BASIC BEGINNER'S PACK . . .

A subtle blend of software and book to enliven the dullest of Commodore 64's.

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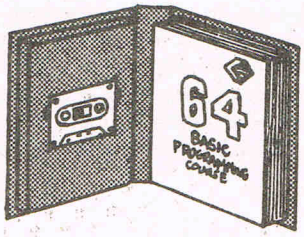

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A spritely interlude

It's welcome back to Pete Gerrard who has taken time off from writing his successful computer books and games to provide us with this insight into how collision detection with fellow sprites and data works

Sprites are an often used feature of the Commodore 64, and are one of the most powerful of it's graphical capabilities. Yet each month the computer magazines see a host of letters concerning these little beasts, and in particular everyone wants to know, and few seem to understand, how collision detection with both fellow sprites and data works.

For the purposes of this article, we might as well get a sprite on the screen, so the following short program will accomplish this for us.

SPRITE INVERTER

```
5 DIMSP(63),SD(63)
10 POKE53280,0:POKE53281,0:PRINT"SPRITE MOVER.":GO
SUB30000:GOSUB996
15 V=53248:POKEV+23,1:POKEV+29,1
20 POKEV+21,1:POKEV+1,120:POKEV,160
22 PRINT"PRESS 'D' TO INVERT THE SPRITE.":PRINT"PR
ESS 'U' TO NORMALISE IT AGAIN.
24 GETA$:IFA$="U"THEN34
25 IFA$<>"D"THEN24
32 FORI=0TO63:POKE832+I,SD(I):NEXT
33 GOTO24
34 FORI=0TO63:POKE832+I,SP(I):NEXT:GOTO24
996 FORI=0TO20:FORJ=0TO2
997 SD(I*3+J)=SP(60-(I*3)+J)
998 NEXTJ,I
999 SD(60)=SP(0):SD(61)=SP(1):SD(62)=SP(2):RETURN
30000 FORI=0TO63:READA:POKE832+I,A:SP(I)=A:NEXT:PO
KE2040,13:POKE53287,7:RETURN
30001 DATA0,127,0,1,255,192,3
30002 DATA255,224,3,231,224,7,217
30003 DATA240,7,223,240,7,217,240
30004 DATA3,231,224,3,255,224,3
30005 DATA255,224,2,255,160,1,127
```

```
30006 DATA64,1,62,64,0,190,128
30007 DATA0,156,128,0,73,0,0
30008 DATA73,0,0,62,0,0,62
30009 DATA0,0,62,0,0,28,0,0

READY.
```

Sprite Inverter

Before getting into the nitty gritty, let's see how this program works. It takes a sprite (any sprite) and inverts it's image on the screen. In other words, instead of having two lots of data for two different sprites, and invariably getting it slightly wrong, this program will turn one sprite on its head, and reverse it back again, at the touch of a key.

Explanation

Line 5 : Just set up a couple of arrays.

Line 10 : We'll have a black border and a black background, and just print up a simple message. You may care to clear the screen at this point, just to make things a bit more legible. Then, go to the subroutine starting at line 30000 to set up the sprite, and then go to the subroutine starting at line 996 to invert the sprite.

Line 15 : Set the variable V, and magnify the sprite in the X and Y directions.

Line 20 : Turn the sprite on, and give it an X co-ordinate of 160 and a Y co-ordinate of 120, which puts it in a fairly central spot on the screen.

Line 22 : Just a set of instructions.

Line 24 : Get a key press, and if that key is the 'U' one then go to line 34.

Line 25 : If the key isn't the 'D' one then return to line 24 and wait until either 'U' or 'D' is pressed.

Line 32 : We're inverting the sprite, so put all the data in the SD array into the 13th area of sprite data.

Line 33 : Bit obvious, this one.

Line 34 : We're turning the sprite the right way up again, so put all the data in the SD array into the 13th area of sprite data.

Line 996 : Start of two loops that performs the inversion.

Line 997 : Going in steps of three, take the bottom row of the original sprite, and put it in the top row of the inverted one. In other words, we're simply swopping data around in steps of three.

Line 998 : Carry on the loops.

Line 999 : Do the last three elements of the array the long way, and return from this routine.

Line 30000 : Read in the sprite data for the normal sprite, put it in the 13th block of sprite memory, and also put it into the array SP. Then, inform the computer where you've put the data, and turn it into a yellow sprite before returning from this routine.

The program works, is it's chief feature, and it does get a sprite on the screen.

Collision Detection

Provided that you've cleared the screen, that last program should have a sprite sitting serenely in the middle of it, touching neither sprite nor background data.

If we were now to PEEK registers 53278 and 53279 we would get a value of zero in each of them, for it is these two registers which determine which sprite has collided with what.

Location 53278 works in the following way:

Sprite Number	7	6	5	4	3	2	1	0
Value	128	64	32	16	8	4	2	1

If the location contains a zero, then there are no sprite to sprite collisions taking place. If the location contains a one, then sprite zero is involved, a two indicates a sprite one collision, and so on, until a value of 128 would indicate that sprite seven is involved. Of course, since this location detects sprite to sprite collisions, it would never contain a simple value as outlined above, since there must be at least two sprites together to register a collision in the first place.

So, if the value found from PEEKing that location was, say, 17, it would mean that sprites four and zero have collided. A value of 36 would indicate that sprites five and two have collided.

Multiple sprite collisions are also possible, so if the value of PEEK(53278) was found to be 41, then sprites five, three and zero are all involved. If the value is 255, then every sprite in the world is involved, and there'll be a grubby mass of sprites somewhere on the screen.

Or maybe not, since sprites can collide off screen as well, so watch out.

To illustrate this in action, add the following lines to your program:

```
16 POKE2041,13:POKE53288,5
23 PRINT"[HOME,8SP,HOME]"PEEK(53278):PEEK(53279)
```

and alter the following lines as well:

```
15 V=53248:POKEV+23,3:POKEV+29,3
20 POKEV+21,3:POKEV+1,120:POKEV,160:POKEV+3,110:POKEV+2,150
```

Running the program with these alterations will put a second sprite on the screen, touching the first one, and the value in location 53278 is now displayed in the top left hand corner of the screen. The value next to it is that for location 53279, which presently contains zero as there is no background data on the screen.

Collision: What collision?

So handling sprite to sprite collisions is quite straightforward. But what about sprite to data? Here we are not concerned with the value to be found in location 53279 other than being satisfied that it does not contain zero. As long as it holds some other value, then that serves to tell us that the sprite has collided with something.

Say we want to check for sprite zero. We know that the X and Y co-ordinates for sprite zero are held in locations 53248 and 53249 respectively. As soon as a sprite to data collision is detected, a PEEK of these locations will give us the X and Y co-ordinates for the sprite.

Say we get the values of one hundred and fifty for X and one hundred and twenty five for Y at the moment of collision. Divide X by eight and Y by eight to give us the new values of eighteen and fifteen respectively, after taking the INTeger part of the answer only. Multiplying the Y value by forty gives us a value of six hundred, and adding our X value of eighteen to this gives us a total of six hundred and eighteen.

Add this to the screen start value, which is usually one thousand and twenty four, and we arrive at a final total of 1642. Now, at least, if we type PEEK(1642) we can find out what was on the screen when the sprite hit it.

A complicated process maybe, but it works, and the following program shows this in action.

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All books written by Peter Gerrard, former editor of *Commodore Computing International*, author of two top-selling games for the Commodore 64, or by Kevin Bergin. Both are regular contributors to *Personal Computer News*, *Which Micro?*, *Popular Computing Weekly* and *Commodore Horizons*.

SPRITES & SOUND ON THE COMMODORE 64
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A complete guide to using the extraordinary features of the Commodore 64, together with a full working explanation of the chips that make it possible: the 6581 Sound Interface Device and the 6566 Video Interface Chip, together with the processor that make it all tick, the 6510.

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THE COMPLETE 64 ROM DISASSEMBLY
by Peter Gerrard and Kevin Bergin

This book is for anyone who has ever wondered how the Commodore 64 really works. Intended for the serious programmer, it includes fundamental memory maps, memory architecture maps, the disassembly itself and (for reference) the complete machine code instruction set.
£5.95

EXPLORING ADVENTURES ON THE 64
by Peter Gerrard

The complete guide to computer adventure games: playing, writing and solving them. Starting with an introduction to adventures, and their early history, it takes you gently through the basic programming necessary on the 64 before you can start writing your own games. Inputting of information, room mapping, movement, vocabulary, and everything required to write an adventure game are explored in full detail. Then follow a number of adventure scenarios, and finally three complete listings, written specially for the 64. The games are available on one cassette at £7.95.
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USING THE COMODORE 64
by Peter Gerrard

A complete look at the latest home computer from Commodore Business machines. Starting with a refresher course in Basic Programming, it moves on through machine code, before considering in great detail sprites, graphics and sound. A section on peripherals, and then the heart of the book: an in-depth look at the chips that make it work, including the 6581 Sound Interface Device and the 6566 Video Controller Chip, as well as the heart of the computer, the 6510. The comprehensive appendices cover the full Basic and Machine Code Instruction sets, as well as several useful reference tables, and a complete machine code assembler/disassembler listing.

Personal Computer News said: "In this case, we are dealing with a gem of a book. It deserves a place on the bookshelves of every 64 user whether beginner or expert."
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Many other books and cassettes are available, write in for a catalogue.

DUCKWORTH, The Old Piano Factory, 43 Gloucester Crescent, London NW1 7DY. Tel: 01-485 3484

SPRITE COLLIDER

```
10 POKE53280,0:POKE53281,0:PRINT"[CLR,RVS,YEL]SPRI
TE COLLIDER.":GOSUB30000:A=35
15 V=53248:POKEV+23,0:POKEV+29,0:A$=CHR$(A)
20 POKEV+21,1:POKEV+1,120:POKEV,160:PRINT"[CLR]":G
OTO23
21 REM PUT PEEK(53279) ON SCREEN
22 PRINT"[HOME]          [HOME]":PEEK(53279):PRINT"[H
OME]          [HOME]":PEEK(53279):RETURN
23 FORJ=1TO3:PRINT"[HOME,9CD]
                    ":GOSUB22
24 FORI=1TO1000:NEXT
25 REM PUT UP CHARACTER A$
26 PRINT"[HOME,9CD,GRN]"::FORI=0TO38:PRINTA$::NEXT
:GOSUB22
27 FORI=1TO1000:NEXT
28 NEXTJ
30 X=PEEK(53248):Y=PEEK(53249):X=INT(X/8)-2:Y=INT(
Y/8)-6:Y=Y*40:REM ADJUSTMENT!
32 S=1024+X+Y:S=PEEK(S)
33 REM GET CO-ORDINATES AND PEEK THEM
34 PRINT"[2CD]YOU COLLIDED WITH CHARACTER # "S
36 PRINT"[CD]TO PROVE IT, LOOK AT THE TOP LEFT HAN
D  CORNER OF THE SCREEN."
37 FORI=1TO3000:NEXT
38 PRINT"[CLR]":POKE1024,S:POKE55296,5
39 REM POKE CHARACTER S ONTO SCREEN
40 FORI=1TO2000:NEXT
42 A=A+1:IFA>95THENA=33
43 A$=CHR$(A):REM UPDATE CHARACTER
44 GOTO20
30000 FORI=0TO63:READA:POKE832+I,A:NEXT:POKE2040,1
3:POKE53287,7:RETURN
30001 DATA0,127,0,1,255,192,3
30002 DATA255,224,3,231,224,7,217
30003 DATA240,7,223,240,7,217,240
30004 DATA3,231,224,3,255,224,3
30005 DATA255,224,2,255,160,1,127
30006 DATA64,1,62,64,0,190,128
30007 DATA0,156,128,0,73,0,0
30008 DATA73,0,0,62,0,0,62
30009 DATA0,0,62,0,0,28,0,0

READY.
```

Knowing all this, you can happily move sprites around all over the place, and find out what they're colliding with. May all your programs be spritely ones!

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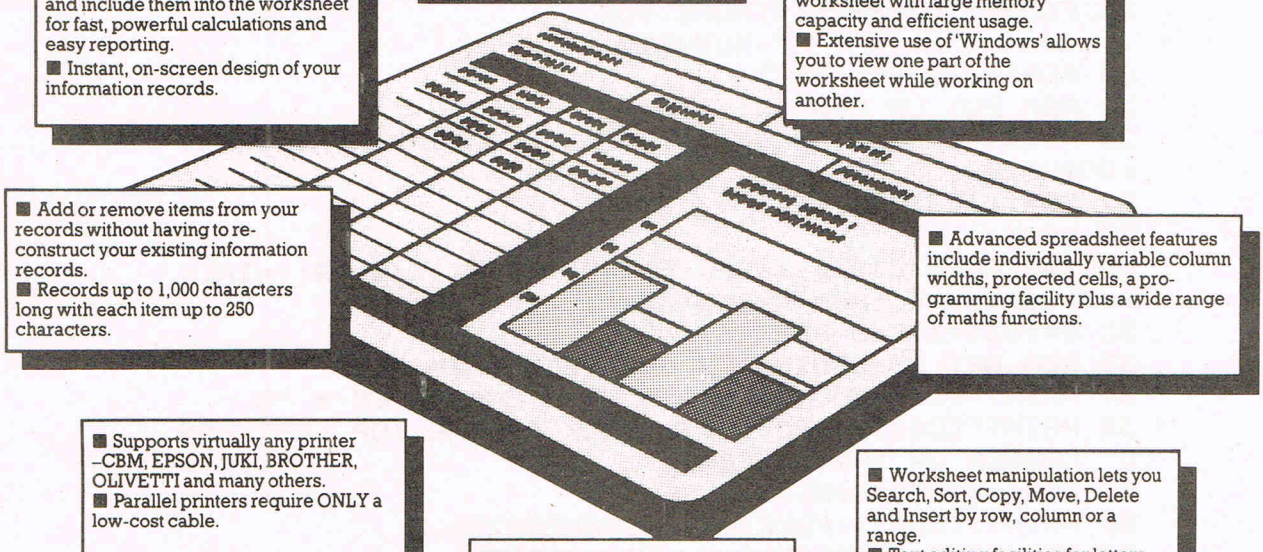

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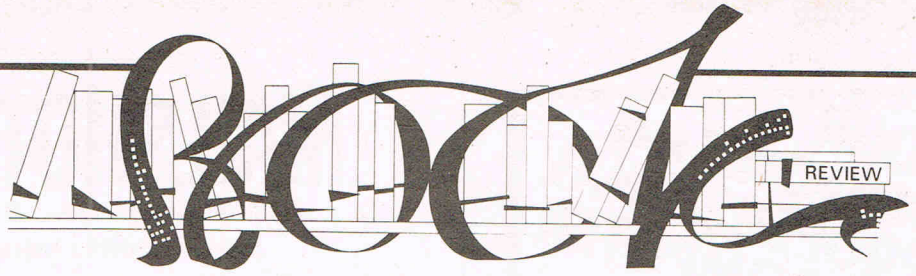

THE COMPANION TO THE COMMODORE 64

Any book claiming to be a companion to the Commodore 64 Reference Guide, would have to be of outstanding quality to justify that claim. This book, as it happens, is.

Whereas the Commodore 64 Reference Guide concentrates on the more technical aspects of the 64, Keith Bowden has tried to emphasise the creative uses of the 64's excellent graphical and sound capabilities.

The book is a mine of information. Chapters are split up to deal with the 64's machinations: its 6510 memory organisations, sound and graphics capabilities, character and sprite animations and the relevance of raster interrupts.

If the Reference Guide has already gone into detail about certain aspects of the 64, Bowden does not waste his time covering the same ground. For instance in the chapter devoted to animation, he does not go into detail about sprites as they are already chronicled in the Reference Guide.

Bowden has taken care to include practical programming aids such as machine code interrupt routines which can be used to drive animated displays or for generating music and music interpreters to create background music (Magic Roundabout in this instance) while programming. BASIC version of routines are also included.

In addition three main BASIC programs are listed to reinforce the explanations of the SID and VIC II chips and their significance to the 64's sound and graphics facilities. A synthesiser program, enables the programmer to create sounds with the SID chip and the other two graphics programs enable bit-mapped pictures in both high resolution and multi colour to be designed.

The author has also reviewed some utilities, games and books that he considers helpful and has listed a number of 64 locations.

Bowden's obvious enthusiasm for the 64's potential overwhelms the reader. However the reams of information stuffed into the pages does sometimes cause the mind to wander. Fortunately it soon returns when yet another programming gem is discovered.

There is no doubt that any 64 owner keen to start inventing games or other programs on the 64 will find this book, together with the Commodore 64 Reference Guide, an invaluable aid. Well worth £5.95.

Contact: Pan Books Ltd (in association with Personal Computer News, Cavaye Place, London SW10.

THE ADVANCED 64 HANDBOOK

This book could be used as a small reference volume and dipped into when information on various aspects of the 64 are needed.

Information has been consigned to the numerous chapters in a methodical and uncomplicated way. If the reader is stuck on a particular aspect of the 64, for instance display interrups, the MPS 801 dot matrix printer, advanced disk operation with the 1541 disk drive or even finding out how to increase the 'user friendliness' of personal programs, he or she will find locating the relevant section easy. Another bonus is that the text is not filled with unnecessary waffle.

Peter Lupton and Frazer Robinson intend the handbook to be a companion guide to the "Commodore 64 Handbook", published by the same company, and assume that the reader will be familiar with BASIC. Their aim is to provide the reader with the opportunity to find out even more about the 64.

A large section of the book is devoted to machine code. It is a difficult language to understand, but since it is the 64's own language it is important to make the effort. The 6510 Microprocessor's architecture, the instruction set used and its various operational abilities are all explained.

Throughout the book, diagrams, program listings and programming sequences are used to reinforce and illustrate the text.

Other chapters in the book cover the various graphic modes of the 64 – standard and multi coloured bit mapped graphics, the VIC II chip and display interrupts plus the SID chip and methods of playing tunes with the synthesiser.

The authors have also included a number of appendices which the programmer may find invaluable, for instance error messages and their explanations, a summary of DOS commands, BASIC abbreviations, Kernal routines graphics loader programs and both SID and VIC II registers.

The authors have eliminated any unnecessary padding and although nothing is covered in extensive detail, no-one will mind that the book is not a totally authorative text, because it does convey, in a clear and concise fashion, what it is he or she wants to know. Detailed information can always be located somewhere else. The books usefulness justifies the price of £6.95.

Contact: Century Communications Ltd., 12-13 Greek Street, London W1.

THE COMMODORE 64 PUZZLE BOOK

We are told in the introduction that life is one long problem solving experience, a condition analagous to programming the computer. Both require solutions, but these are invariably arrived at by different means.

Brian Boyde Shaw assumes the reader has at least a minimum working knowledge of BASIC and poses over forty programming problems for the reader to solve with his 64.

They are not, as the title suggests, puzzles in the conventional sense – crosswords or general knowledge quizzes, but problems requiring solutions reached by using the computer.

The problems are divided into six sets and Boyde Shaw has graded them in order of complexity. The novice programmer can begin by learning relatively simple procedures with posers such as "Write a program to print your name on a completely clear screen" and then goes onto harder problems dealing with topics such as screen printing, string and other logical functions, basic games routines and the relationship of letters to numbers, using methods larned in earlier problems.

The final chapter deals with a mixture of topics including conversions and music, with one of the last problems asking the programmer to use the television screen as a digital clock displaying hours, minutes and seconds.

Boyde Shaw provides all the possible answers to the problems in the book and does his best to explain how he has arrived at them using both text and programs. The main BASIC language commands are listed in the first chapter, but any other commands that are necessary in problems are listed at the front of the relevant chapter. An aid reminiscent of early learning reading books, where all new words are listed!

Boyde Shaw emphasises that the book is not designed to teach anyone computer programming, but to develop the ability to think logically and solve problems.

Written in entertaining and uncomplicated prose, this book would be worth the £6.95 for anyone who enjoys solving problems.

Contact: Sigma Technical Press, 5 Alton Road, Wilmslowm, Cheshire.

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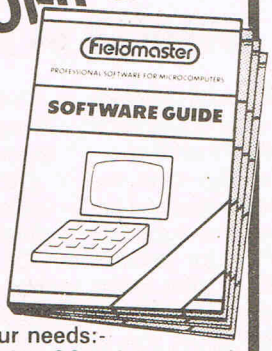

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LETTERS

Dear Sir
I have been purchasing Commodore Computing International for a number of months now and find the contents very good. Being new to the use of computers, I still rely on magazines like yours to inform me on the latest products and news.

However some of your programs seem to have a number of printer errors and the latest appeared in "Maze" from the May issue. I found that there was a bad subscript in line 510. Could you please help, these minor problems spoil for me what is otherwise a good magazine.

Mr T Fromson
Tyne and Wear

We are pleased that you enjoy our magazine, but feel that your comments on our programs are unfair. We thoroughly check all programs before they are printed and in our experience it is usually the programmer who makes the error!

It sounds as if you have missed out either the 'w' or '%' from lines 510 or 340. The printed program is correct and so we advise you to check these lines again.

Dear Sir
I am slowly going round the twist!

I have a VIC 20 with a Stack RS232C interface attached to the back. I also have a Brother CE60 Electronic daisy wheel printer which connects to the VIC 20 via a Brother cable and its interface. The printer accepts both RS232C and Centronics parallel, but the whole shooting match fails to come alive!

The Stack interface has a 25 pin male plug on the back of it and so, unfortunately does the Brother cable. However by VERY careful soldering I have paralleled off the pins so that the cable will accept a 25 pin socket. It still fails to operate, I know not why.

Can you please throw some light on the subject, I should hate to think that Commodore have led me up the garden path.

A S A Clack
Cirencester
Glos

It is very difficult to advise you on your predicament without seeing the printer manuals first. Your best course of action would be to contact the company who made the printer.

Your problem highlights the need for all Commodore computer owners to look at the printer market carefully before investing. Commodore, in their wisdom have included their own interfaces in all the computers, so not all printers will operate satisfactorily with them – as you seem to have found out.

Dear Sir
I am having trouble with the Breakout program in the April issue, No 11 Vol 2. Everytime I enter the program, I get a constant "Out of Data" error shown with respect to line 1190 (ReadA:Poke1,A:Next: Goto1280). Is this line correct?

I also noticed that in the Cursor Character Box, page 49, if I pressed the control key and key 3 I should print . However when I do press these keys, I get . Can you enlighten me?

Mr J Moore
Hartlepool
Cleveland

The Breakout program is correct. It sounds as if you need to check your data again.

The characters in the Cursor Character box are shown as they appear on our Commodore printer and on our listings. We don't print the characters as they appear on the 64's screen as we think it will be easier for programmers to type in programs from the published listings.

Dear Sir
In the May issue of Commodore Computing International, you have a software review entitled "Elementary Watson". Unfortunately my husband and I have had trouble obtaining a copy of Dr Watson's Beginners Basic Course plus Honey Aid, with book and tape for the 64.

We are both pleased with your magazine. It is very explicit and unlike others, the print is clear and understandable.

Mrs J V Claypole
Barry
S. Glamorgan

The Dr Watson series of computer language courses can be obtained from Honeyfold Software Ltd, Standfast House, Bath Place, Barnet, London. Tel: 01 441 4130.

Dear Sir
I recently saw a program featuring a development rack. Printed circuit boards with extra chips and Eproms slot into the rack and it connects them to a computer system. The rack can be used in the development stages of a program and what I would like to know is whether there is a rack available for the 64.

Antonio Windas
Hull

The simple answer is that there isn't! The 64 has a large enough memory for most programming purposes and so there isn't a market for memory expanders.

Dear Sir
Firstly, thank you for providing a publication which caters for both the novice and the proficient in Commodore computing.

Secondly, I wonder if you could furnish me with some advice.

I would like to learn more about Machine Code programming on the 64. I have dabbled with machine code on a VIC 20, laboriously POKEing the code into memory, so I am familiar with mnemonics and source code.

However when attempting to actually buy an Assembler, I become baffled by the advertising claims of the many suppliers. They all seem to assume that prospective purchasers are familiar with technical terms relating to their products. Some boast the number of "pseudo - ops" and "control commands" while others inform me I can manipulate blocks of memory, use labels or output to screen (which I thought I could do anyway!).

I assume that the only way to find out what these mysterious tributes are is to buy an Assembler and see. But, I am fearful that I may end up with something which I don't need.

Help me please! I am sure there must be other people like me who would like to venture into machine code programming, but lack sufficient knowledge to assess the merits of any product offer. What about an article on Assemblers and their relative merits?

Richard Bennett
Tarporley
Cheshire

We have had a few letters requesting information on machine code for beginners and will probably be publishing an article on assemblers and machine code in the near future.

At present we use either the Mikro, a full 6502/6510 Assembler (£57.50) from Supersoft, a resident system which doesn't require a disk drive, or the Assembler Development (£24.95) from Commodore. This is disk based and can create and call macro routines.

Commodore also do an Assembler Tutor (£29.95) which claims to be a teaching aid for would-be assembly programmers.

Contact: Supersoft, Winchester House, Canning Road, Wealdstone, Harrow, Middlesex and Commodore, 675 Ajax Avenue, Slough, Berks.

THE ADDRESS TO WRITE TO IS:
QUERIES, Commodore Computing International,
167-169 Great Portland Street, London W1.

THE TELEPHONE NUMBER TO CALL IS:
01-636 6354 (remember – Thursday afternoons, 2 pm till 5 pm)

TELEPHONE ENQUIRIES:
If you are really desperate for an answer and feel you really cannot wait for a published reply you can use our telephone enquiry service. We will have two of our staff standing-by every Thursday afternoon between 2 pm and 5 pm. That's when we want to hear from you.

Store and retrieve

This useful routine for the 64, when initialised, allows you to store and retrieve up to four screens. This is done by trapping the function keys in interrupts and storing or collecting screen data from an area behind the Basic ROM. It was written by J S Rafferty.

The screen flicking can be done in direct mode by pressing one of the function keys or in a Basic program by the use of a few simple pokes.

The program has several uses – it can be used to store four sections of a program listing so that to make an alteration to a certain line just press a function key and make the alteration, or for simple screen animation.

By pressing the function key with the shift key held down, the screen and colour memory is copied to an area behind the Basic ROM or by just pressing the function key, the screen is retrieved.

The program can be entered using the Basic loader (first listing) but the source code (MIKRO assembler) is also included.

To control the changing from a Basic program is as follows:

```
POKE653,1:POKE197,4:POKE198,1:REM STORE F1 SCREEN
POKE653,1:POKE197,5:POKE198,1:REM STORE F3 SCREEN
POKE653,1:POKE197,6:POKE198,1:REM STORE F5 SCREEN
POKE653,1:POKE197,3:POKE198,1:REM STORE F7 SCREEN
POKE197,4:POKE198,1:REM RETRIEVE F1 SCREEN
POKE197,5:POKE198,1:REM RETRIEVE F3 SCREEN
POKE197,6:POKE198,1:REM RETRIEVE F5 SCREEN
POKE197,3:POKE198,1:REM RETRIEVE F7 SCREEN
```

```
1 REM**********************
2 REM       SNAPSHOT
3 REM
4 REM   BY  J.S.RAFFERTY
5 REM
6 REM**********************
10 A=49152
20 T=0
30 READN
40 IFN=-1THENGOTO90
50 T=T+N
60 POKEA,N
70 A=A+1
80 GOTO30
90 IFT<>48956THENPRINT"■■ERROR IN DATA":END
100 DATA120,169,16,141,20,3,169,192,141,21
110 DATA3,88,96,20,255,32,165,197,201,4
120 DATA208,7,173,141,2,208,44,240,110,165
130 DATA197,201,5,208,7,173,141,2,208,48
140 DATA240,114,165,197,201,6,208,7,173,141
150 DATA2,208,52,240,118,165,197,201,3,208
160 DATA7,173,141,2,208,56,240,122,76,49
170 DATA234,169,0,133,251,133,249,169,160,133
180 DATA252,169,164,133,250,76,207,192,169,0
190 DATA133,251,133,249,169,168,133,252,169,172
200 DATA133,250,76,207,192,169,0,133,251,133
210 DATA249,169,176,133,252,169,180,133,250,76
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220 DATA207,192,169,0,133,251,133,249,169,184
230 DATA133,252,169,188,133,250,76,207,192,169
240 DATA0,133,251,133,249,169,160,133,252,169
250 DATA164,133,250,76,251,192,169,0,133,251
260 DATA133,249,169,168,133,252,169,172,133,250
270 DATA76,251,192,169,0,133,251,133,249,169
280 DATA176,133,252,169,180,133,250,76,251,192
290 DATA169,0,133,251,133,249,169,184,133,252
300 DATA169,188,133,250,76,251,192,169,0,133
310 DATA253,133,247,169,4,133,254,169,216,133
320 DATA248,162,4,160,0,177,253,145,251,177
330 DATA247,145,249,200,208,245,202,240,68,230
340 DATA254,230,252,230,248,230,250,24,76,225
350 DATA192,165,1,41,254,133,1,169,0,133
360 DATA253,133,247,169,4,133,254,169,216,133
370 DATA248,162,4,160,0,177,251,145,253,177
380 DATA249,145,247,200,208,245,202,240,12,230
390 DATA254,230,252,230,250,230,248,24,76,19
400 DATA193,165,1,9,1,133,1,169,0,133
410 DATA198,76,49,234,-1
420 SYS49152
430 PRINT"■■HAVE YOU SAVED PROGRAM (Y/N) ?"
440 POKE198,0:WAIT198,1
450 IFA$="Y"THEN NEW
460 PRINT"■■PLEASE SAVE PROGRAM":END
READY.
```

```
1000 C000          *=$C000
1010 C000          VMAT          =  $FD
1020 C000          BASE          =  $FB
1030 C000          CMOV          =  $F9
1040 C000          COLR          =  $F7
1050 C000          SHIFT         =  $028D
1060 C000 78                     SEI
1070 C001 A910                   LDA #$10
1080 C003 8D1403                 STA $0314
1090 C006 A9C0                   LDA #$C0
1100 C008 8D1503                 STA $0315
1110 C00B 58                     CLI
1120 C00C 60                     RTS
1130 C010          *=$C010
1140 C010 A5C5                   LDA $C5
1150 C012 C904                   CMP #4
1160 C014 D007                   BNE TRYB
1170 C016 AD8D02                 LDA SHIFT
1180 C019 D02C                   BNE SCRA
1190 C01B F06E                   BEQ AMAT
1200 C01D A5C5     TRYB          LDA $C5
```

```
1210 C01F C905          CMP #5
1220 C021 D007          BNE TRYC
1230 C023 AD8D02        LDA SHIFT
1240 C026 D030          BNE SCRB
1250 C028 F072          BEQ BMAT
1260 C02A A5C5   TRYC   LDA $C5
1270 C02C C906          CMP #6
1280 C02E D007          BNE TRYD
1290 C030 AD8D02        LDA SHIFT
1300 C033 D034          BNE SCRC
1310 C035 F076          BEQ CMAT
1320 C037 A5C5   TRYD   LDA $C5
1330 C039 C903          CMP #3
1340 C03B D007          BNE NOFUN
1350 C03D AD8D02        LDA SHIFT
1360 C040 D038          BNE SCRD
1370 C042 F07A          BEQ DMAT
1380 C044 4C31EA NOFUN  JMP $EA31
1390 C047 A900   SCRA   LDA #0
1400 C049 85FB          STA BASE
1410 C04B 85F9          STA CMOV
1420 C04D A9A0          LDA #$A0
1430 C04F 85FC          STA BASE+1
1440 C051 A9A4          LDA #$A4
1450 C053 85FA          STA CMOV+1
1460 C055 4CCFC0        JMP VOUT
1470 C058 A900   SCRB   LDA #0
1480 C05A 85FB          STA BASE
1490 C05C 85F9          STA CMOV
1500 C05E A9A8          LDA #$A8
1510 C060 85FC          STA BASE+1
1520 C062 A9AC          LDA #$AC
1530 C064 85FA          STA CMOV+1
1540 C066 4CCFC0        JMP VOUT
1550 C069 A900   SCRC   LDA #0
1560 C06B 85FB          STA BASE
1570 C06D 85F9          STA CMOV
1580 C06F A9B0          LDA #$B0
1590 C071 85FC          STA BASE+1
1600 C073 A9B4          LDA #$B4
1610 C075 85FA          STA CMOV+1
1620 C077 4CCFC0        JMP VOUT
1630 C07A A900   SCRD   LDA #0
1640 C07C 85FB          STA BASE
1650 C07E 85F9          STA CMOV
1660 C080 A9B8          LDA #$B8
1670 C082 85FC          STA BASE+1
1680 C084 A9BC          LDA #$BC
1690 C086 85FA          STA CMOV+1
```

```
1700 C088 4CCFC0              JMP VOUT
1710 C08B A900    AMAT        LDA #0
1720 C08D 85FB                STA BASE
1730 C08F 85F9                STA CMOV
1740 C091 A9A0                LDA #$A0
1750 C093 85FC                STA BASE+1
1760 C095 A9A4                LDA #$A4
1770 C097 85FA                STA CMOV+1
1780 C099 4CFBC0              JMP VIN
1790 C09C A900    BMAT        LDA #0
1800 C09E 85FB                STA BASE
1810 C0A0 85F9                STA CMOV
1820 C0A2 A9A8                LDA #$A8
1830 C0A4 85FC                STA BASE+1
1840 C0A6 A9AC                LDA #$AC
1850 C0A8 85FA                STA CMOV+1
1860 C0AA 4CFBC0              JMP VIN
1870 C0AD A900    CMAT        LDA #0
1880 C0AF 85FB                STA BASE
1890 C0B1 85F9                STA CMOV
1900 C0B3 A9B0                LDA #$B0
1910 C0B5 85FC                STA BASE+1
1920 C0B7 A9B4                LDA #$B4
1930 C0B9 85FA                STA CMOV+1
1940 C0BB 4CFBC0              JMP VIN
1950 C0BE A900    DMAT        LDA #0
1960 C0C0 85FB                STA BASE
1970 C0C2 85F9                STA CMOV
1980 C0C4 A9B8                LDA #$B8
1990 C0C6 85FC                STA BASE+1
2000 C0C8 A9BC                LDA #$BC
2010 C0CA 85FA                STA CMOV+1
2020 C0CC 4CFBC0              JMP VIN
2030 C0CF A900    VOUT        LDA #0
2040 C0D1 85FD                STA VMAT
2050 C0D3 85F7                STA COLR
2060 C0D5 A904                LDA #4
2070 C0D7 85FE                STA VMAT+1
2080 C0D9 A9D8                LDA #$D8
2090 C0DB 85F8                STA COLR+1
2100 C0DD A204                LDX #4
2110 C0DF A000                LDY #0
2120 C0E1 B1FD    LOOP        LDA (VMAT),Y
2130 C0E3 91FB                STA (BASE),Y
2140 C0E5 B1F7                LDA (COLR),Y
2150 C0E7 91F9                STA (CMOV),Y
2160 C0E9 C8                  INY
2170 C0EA D0F5                BNE LOOP
2180 C0EC CA                  DEX
```

```
2190 C0ED F044                BEQ EXIT
2200 C0EF E6FE                INC VMAT+1
2210 C0F1 E6FC                INC BASE+1
2220 C0F3 E6F8                INC COLR+1
2230 C0F5 E6FA                INC CMOV+1
2240 C0F7 18                  CLC
2250 C0F8 4CE1C0              JMP LOOP
2260 C0FB A501    VIN         LDA $01
2270 C0FD 29FE                AND #$FE
2280 C0FF 8501                STA $01
2290 C101 A900                LDA #0
2300 C103 85FD                STA VMAT
2310 C105 85F7                STA COLR
2320 C107 A904                LDA #4
2330 C109 85FE                STA VMAT+1
2340 C10B A9D8                LDA #$D8
2350 C10D 85F8                STA COLR+1
2360 C10F A204                LDX #4
2370 C111 A000                LDY #0
2380 C113 B1FB    POOL        LDA (BASE),Y
2390 C115 91FD                STA (VMAT),Y
2400 C117 B1F9                LDA (CMOV),Y
2410 C119 91F7                STA (COLR),Y
2420 C11B C8                  INY
2430 C11C D0F5                BNE POOL
2440 C11E CA                  DEX
2450 C11F F00C                BEQ PREX
2460 C121 E6FE                INC VMAT+1
2470 C123 E6FC                INC BASE+1
2480 C125 E6FA                INC CMOV+1
2490 C127 E6F8                INC COLR+1
2500 C129 18                  CLC
2510 C12A 4C13C1              JMP POOL
2520 C12D A501    PREX        LDA $01
2530 C12F 0901                ORA #1
2540 C131 8501                STA $01
2550 C133 A900    EXIT        LDA #0
2560 C135 85C6                STA 198
2570 C137 4C31EA              JMP $EA31
```

By all accounts

Fed up with those 'polite' reminders from your bank manager? Keep track of your bank account with this program for the 64 called Bank Book, written by J R Christer.

The program is designed to keep records of chequebook transactions including standing orders.

Files are stored on the 1541 disk drive and hardcopies of statements etc, may be output to a Commodore printer.

Options in the program are:

(1) Enter Standing order
(2) Erase Standing order
(3) Deduct Standing orders
(4) Enter any Debits
(5) Enter any Credits
(6) Statement Printout
(7) Save Data to Disk
(8) Load Data from Disk
(F1) File Search by Name
(F3) File Search by Cheque Number
(F5) File Search by Date

```
1000 DATA32,241,183,134,87,32,241
1010 DATA183,134,88,224,40,176,6
1020 DATA165,87,201,26,144,3,76
1030 DATA72,178,32,102,229,165,87
1040 DATA240,9,169,17,32,22,231
1050 DATA198,87,208,247,165,88,240,9,169,29,32,22,231,198
1060 DATA88,208,247,32,253,174,76,160,170,-1
1070 DATA120,169,73,141,143,2,169,3,141,144,2,88,96,8
1080 DATA72,138,72,152,72,165,197,205,138,3,240,43,141,138
1090 DATA3,169,15,141,24,212,169,0,141,5,212,169,5,141
1100 DATA6,212,169,34,141,1,212,169,75,141,0,212,169,32
1110 DATA141,4,212,169,33,141,4,212,169,32,141,4,212,104
1120 DATA168,104,170,104,40,76,72,235,64,-1
1130 I=49264:SY=49264
1140 READA:IFA=-1THEN1160
1150 POKEI,A:I=I+1:GOTO1140
1160 I=828
1170 READA:IFA=-1GOTO1190
1180 POKEI,A:I=I+1:GOTO1170
1190 DIMST$(10,5),N$(500,5):PRINT"■"
1200 SYS828
1210 POKE53280,12:POKE53281,12:CR$=CHR$(13):CN$="0":SO$="0":V$="0":SO=1
1220 OPEN15,8,15:PRINT#15,"I0"
1230 NC=1:SP$="          ":B0$="000000"
1240 PRINT"■"
1250 SYSSY,4,4,"■■                                    ■■"
1260 SYSSY,5,4,"■ ■■                                  ■ ■■"
1270 SYSSY,6,4,"■ ■■   BANK BOOK @ MONEY MANAGER      ■ ■■"
1280 SYSSY,7,4,"■ ■■                                  ■ ■■"
1290 SYSSY,8,4,"■ ■■    PROGRAM BY J.R.CHRISTER       ■ ■■"
1300 SYSSY,9,4,"■ ■■                                  ■ ■■"
1310 SYSSY,10,4,"■                                     ■■"
1320 SYSSY,20,12,"■PRESS RETURN"
1330 GETZ$:IFZ$<>CHR$(13)THEN1330
1340 PRINT"■"
1350 SYSSY,5,0,"■┌──────────────────────────────────────┐"
1360 SYSSY,7,0,"■│                                      │"
1370 SYSSY,8,0,"■│                                      │"
1380 SYSSY,10,0,"■│                                       │"
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```
1390 SYSSY,11,0,"■|                                                    |"
1400 SYSSY,12,0,"■|                                                    |"
1410 SYSSY,13,0,"■|                                                    |"
1420 SYSSY,14,0,"■|                                                    |"
1430 SYSSY,15,0,"■└────────────────────────────────────────────────────┘"
1440 SYSSY,6,0,"■|PLEASE ENTER DAY AND MONTH E.G (21MAY)|"
1450 SYSSY,9,0,"■|       START NEW STATEMENT (Y/N)      |"
1460 X=10:Y=7:GOSUB5780:DA$=Q$
1470 REM4350
1480 GETZ$:IFZ$=""THENSYSSY,9,34," "
1490 IFZ$=""THENSYSSY,9,34,"*":GOTO1480
1500 IFZ$="N"THEN1570
1510 IFZ$<>"Y"THEN1480
1520 CN=1:DL=1
1530 N$(CN,0)="BROUGHT FORWARD"
1540 N$(CN,1)=" ":N$(CN,2)=" ":N$(CN,3)=" ":N$(CN,4)=" ":
1550 PRINT"■| PLEASE ENTER BALANCE BROUGHT FORWARD"
1560 X=10:Y=14:GOSUB5780:N$(CN,5)=Q$
1570 PRINT"■"
1580 SYSSY,1,10,"■┌──────────────────────────────────┐"
1590 SYSSY,2,10,"■|(1) ENTER STANDING ORDER   |"
1600 SYSSY,3,9,"■┌──────────────────────────────────┐|"
1610 SYSSY,4,9,"■|(2) ERASE STANDING ORDER   ||"
1620 SYSSY,5,8,"■┌──────────────────────────────────┐||"
1630 SYSSY,6,8,"■|(3) DEDUCT STANDING ORDERS |||"
1640 SYSSY,7,7,"■┌──────────────────────────────────┐|||"
1650 SYSSY,8,7,"■|(4) ENTER ANY DEBITS       |||┘"
1660 SYSSY,9,6,"■┌──────────────────────────────────┐|||"
1670 SYSSY,10,6,"■|(5) ENTER ANY DEPOSITS     |||┘"
1680 SYSSY,11,5,"■┌──────────────────────────────────┐|||"
1690 SYSSY,12,5,"■|(6) STATEMENT PRINTOUT     ||||"
1700 SYSSY,13,4,"■┌──────────────────────────────────┐|||┘"
1710 SYSSY,14,4,"■|(7) SAVE DATA TO DISK      ||||"
1720 SYSSY,15,3,"■┌──────────────────────────────────┐|||┘"
1730 SYSSY,16,3,"■|(8) LOAD DATA FROM DISK    ||||"
1740 SYSSY,17,2,"■┌──────────────────────────────────┐|||┘"
1750 SYSSY,18,2,"■|(9) END PROGRAM            ||||"
1760 SYSSY,19,2,"■■|  ■┌──────────────────────────────────┐"
1770 SYSSY,20,2,"■■|  ■|[F1] FILE SEARCH BY PAYEE NAME   |"
1780 SYSSY,21,2,"■■|  ■|[F3] FILE SEARCH BY CHEQUE NUMBER|";
1790 SYSSY,22,2,"■■|  ■|[F5] FILE SEARCH BY CHEQUE DATE  |";
1800 SYSSY,23,2,"■■|  ■└──────────────────────────────────┘";
1810 SYSSY,24,2,"■■|     PRESS REQUIRED KEY    |";
1820 SYSSY,25,2,"■└──────────────────────────────┘";
1830 Z$=""
1840 IFZ$=CHR$(133)THEN5480
1850 IFZ$=CHR$(134)THEN6110
1860 IFZ$=CHR$(135)THEN6370
1870 GETZ$:IFZ$<"1"ORZ$>"9"THEN1840
1880 PRINTASC(Z$)
1890 ONASC(Z$)-48 GOTO2470,2810,4190,3410,3090,3770,4330,4560,4900
1900
1910
1920 REM ***************************
1930 REM *** CHECK DATA LOADED ***
1940 REM ***************************
1950 IF DL =1THEN RETURN
1960 PRINT"■■■┌──────────────────────────────────────┐"
1970 PRINT"■|LOAD ROUTINE HAS NOT BEEN EXECUTED   |"
1980 PRINT"■|                                      |"
1990 PRINT"■|                                      |"
2000 PRINT"■|                                      |"
2010 PRINT"■└──────────────────────────────────────┘"
2020 PRINT"■PRESS (1) TO EXECUTED LOAD DATA ROUTINE"
2030 PRINT"■-------------------------------------"
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```
2040 PRINT"■PRESS (9) TO CONTINUE PROGRAM EXECUTION"
2050 PRINT"■----------------------------------------"
2060 GETZ$:IFZ$="9"THEN DL=1:RETURN
2070 IFZ$<>"1"THEN2060
2080 RF=1:GOSUB 4580
2090 RETURN
2100 :
2110 :
2120 :
2130 REM*****************************
2140 REM***READ ERROR CHANNEL ****
2150 INPUT#15,EN,EN$,ET,ES
2160 IFEN=0THENRETURN
2170 REM
2180 PRINT"■■■
```

```
2690 Q$=SO$(SO,3):GOSUB2380:SO$(SO,3)=Q$
2700 IFSO$(SO,1)=""THENSO$(SO,1)="N/A"
2710 IFSO$(SO,2)=""THENSO$(SO,2)="N/A"
2720 SYSSY,13,7,"■DETAILS O.K   (Y/N)"
2730 GETZ$:IFZ$<>"Y"ANDZ$<>"N"THEN2730
2740 IFZ$="N"THENSO=SO-1:GOTO1570
2750 RETURN
2760 :
2770 :
2780 REM*********************************
2790 REM**** ERASE STANDING ORDER****
2800 REM*********************************
2810 GOSUB1900:GOSUB2480:
2820 SYSSY,1,9,"■!ERASE STANDING ORDER!"
2830 X=17:Y=4:GOSUB5780:E$=Q$
2840 X=0:FORI=1TOSO
2850 IFE$=SO$(I,0)THENR=I
2860 NEXT
2870 IFR=0THENPRINT"■■■■■■■■■■■■■■FILE NOT FOUND":GOTO3030
2880 SYSSY,6,17,"";SO$(R,1)
2890 SYSSY,8,17,"";SO$(R,2)
2900 SYSSY,10,17,"";SO$(R,3)
2910 SYSSY,13,8,"■■[1]=ERASE   :[9]=CONTINUE"
2920 GETZ$:IFZ$=""THEN2920
2930 IFZ$="9"THEN3020
2940 IFZ$<>"1"THEN2920
2950 V=V-VAL(SO$(SO,3)):V$=STR$(V)
2960 FORI=RTOSO-1
2970 SO$(I,0)=SO$(I+1,0)
2980 SO$(I,1)=SO$(I+1,1)
2990 SO$(I,2)=SO$(I+1,2)
3000 SO$(I,3)=SO$(I+1,3)
3010 NEXT:SO=SO-1
3020 REM
3030 GOTO1570
3040 :
3050 :
3060 REM*************************
3070 REM***ENTER ANY DEPOSITS****
3080 REM*************************
3090 GOSUB1900
3100 CN=CN+1
3110 SYSSY,0,6,"■■┌──────────────────────┐"
3120 SYSSY,1,6,"■│ . ENTER ANY DEPOSITS . │"
3130 SYSSY,2,6,"■└──────────────────────┘"
3140 SYSSY,3,1,"■┌──────────────────────────────────────┐"
3150 SYSSY,4,1,"■│ NAME       |                         |"
3160 SYSSY,5,1,"■│ DETAILS    |                         |"
3170 SYSSY,6,1,"■│ AMOUNT     |                         |"
3180 SYSSY,7,1,"■│ DATE       |                         |"
3190 SYSSY,8,1,"■└──────────────────────────────────────┘"
3200 Y=4:X=14:GOSUB5780:N$(CN,0)=Q$
3210 Y=5:X=14:GOSUB5780:N$(CN,1)=Q$
3220 Y=6:X=14:GOSUB5780:N$(CN,3)=Q$
3230 Y=7:X=14:GOSUB5780:N$(CN,2)=Q$
3240 IFN$(CN,1)=""THENN$(CN,1)="WAGES"
3250 SYSSY,9,6,"■!DETAILS O.K  (Y/N)!"
3260 SYSSY,10,6,"■└──────────────────┘"
3270 N$(CN,0)=N$(CN,0)+"*"
3280 B=VAL(N$(CN-1,5)):D=VAL(N$(CN,3)):B=B+D
3290 B=INT((B+0.005)*100):B=B/100
3300 N$(CN,5)=STR$(B)
3310 Q$=N$(CN,5):GOSUB2270:N$(CN,5)=Q$
3320 N$(CN,4)=" "
3330 Z$="":GETZ$:IFZ$=""THEN3330
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3340 IFZ$<>"Y"THENCN=CN-1:GOTO1570
3350 GOTO1570
3360 :
3370 :
3380 REM**************************
3390 REM*****ENTER ANY DEBITS****
3400 REM**************************
3410 GOSUB1900
3420 CN=CN+1
3430 SYSSY,0,13,"■◪┌──────────────────┐"
3440 SYSSY,1,13,"◪│ENTER ANY DEBITS  │"
3450 SYSSY,2,13,"◪└──────────────────┘"
3460 SYSSY,4,2,"◪┌──────────────────────────────────────────┐"
3470 SYSSY,5,2,"◪│          BROUGHT FORWARD │               │"
3480 SYSSY,6,2,"◪│PAYABLE TO │              │               │"
3490 SYSSY,7,2,"◪│           │              │               │"
3500 SYSSY,8,2,"◪│           │       AMOUNT │               │"
3510 SYSSY,9,2,"◪│CHEQUE NO  │       BALANCE│               │"
3520 SYSSY,10,2,"◪│DATE       │              │               │"
3530 SYSSY,11,2,"◪└──────────────────────────────────────────┘"
3540 SYSSY,5,33,"";N$(CN-1,5):Y=6:X=16:GOSUB5780:N$(CN,0)=Q$
3550 Y=8:X=29:GOSUB5780:N$(CN,4)=Q$
3560 Y=9:X=14:GOSUB5780:N$(CN,1)=Q$
3570 Y=10:X=14:GOSUB5780:N$(CN,2)=Q$
3580 B=VAL(N$(CN-1,5)):D=VAL(N$(CN,4)):B=B-D
3590 B=INT((B+0.005)*100):B=B/100
3600 N$(CN,5)=STR$(B)
3610 Q$=N$(CN,5):GOSUB2270:N$(CN,5)=Q$
3620 Q$=N$(CN,4):GOSUB2270:N$(CN,4)=Q$
3630 N$(CN,3)=" "
3640 N$(CN,1)=LEFT$(B0$,6-LEN(N$(CN,1)))+N$(CN,1)
3650 SYSSY,9,30,"";N$(CN,5)
3660 SYSSY,12,8,"◪│DETAILS O.K  (Y/N)│"
3670 SYSSY,13,8,"◪└──────────────────┘"
3680 Z$="":GETZ$:IFZ$=""THENGOTO3680
3690 IFZ$<>"Y"THENCN=CN-1:GOTO1570
3700 GOTO1570
3710 :
3720 :
3730 :
3740 REM****************************
3750 REM***STATEMENT PRINTOUT***
3760 REM**************************
3770 GOSUB4960:IFSC=1THENGOTO1570
3780 GOSUB1900:GOSUB 4090:OPEN4,4:IFLS=1THENLS=0:GOTO3940
3790 PRINT#4,CHR$(13)CHR$(16)"32STANDING  ORDERS"
3800 PRINT#4,CHR$(16)"32————————————"CHR$(13)
3810 PRINT#4,"NAME"CHR$(16)"20  DATE"CHR$(16)"37 MONTHS"CHR$(16)"58 AMOUNT"
3820 PRINT#4,"————"CHR$(16)"20  ————"CHR$(16)"37 ———————"CHR$(16)"58 ———————"
3830 V=0
3840 FORI=1TOSO
3850 PRINT#4,SO$(I,0)CHR$(16)"20"SO$(I,1)CHR$(16)"40"SO$(I,2);
3860 PRINT#4,CHR$(16)"60"SO$(I,3)
3870 V=V+VAL(SO$(I,3))
3880 NEXT
3890 V$=STR$(V):V$=RIGHT$(V$,LEN(V$)-1)
3900 Q$=V$:GOSUB2270:V$=Q$
3910 Q$=V$:GOSUB2380:V$=Q$
3920 PRINT#4,CHR$(16)"60————————"
3930 PRINT#4,CHR$(16)"50TOTAL"CHR$(16)"60"V$
3940 PRINT#4,CHR$(13)
3950 PRINT#4,"PAYABLE TO";CHR$(16)"20CHEQUE NO";CHR$(16)"34 DATE";
3960 PRINT#4,CHR$(16)"46DEPOSIT";CHR$(16)"60DEBIT"CHR$(16)"70BALANCE"
3970 PRINT#4,"————————————————————————————————————————";
3980 PRINT#4,"————————————————————————————————————————"
```

```
3990 FORI=1TOCN
4000 Q$=N$(I,3):GOSUB2370:N$(I,3)=Q$
4010 Q$=N$(I,4):GOSUB2370:N$(I,4)=Q$
4020 Q$=N$(I,5):GOSUB2370:N$(I,5)=Q$
4030 PRINT#4,N$(I,0)CHR$(16)"20"N$(I,1)CHR$(16)"34"N$(I,2)CHR$(16)"46";
4040 PRINT#4,N$(I,3)CHR$(16)"60"N$(I,4)CHR$(16)"70"N$(I,5)
4050 NEXT
4060 PRINT#4,CHR$(16)"70──────────"
4070 PRINT#4,CHR$(16)"60BALANCE"CHR$(16)"70"N$(I-1,5)
4080 PRINT#4:CLOSE4:GOTO1570
4090 PRINT"■■■■■■■■■IST STANDING ORDERS (Y/N)"
4100 GETZ$:IFZ$=""THEN4100
4110 IFZ$="N"THENLS=1
4120 RETURN
4130 :
4140 :
4150 REM*********************************
4160 REM**** DEDUCT STANDING ORDERS **
4170 REM*********************************
4180 :
4190 GOSUB1900:PRINT"■■■■■■■■■■■DEDUCT STANDING ORDERS"
4200 PRINT"              ──────────────────────────"
4210 GOTO5320
4220 Q$=N$(CN,5):GOSUB2270:N$(CN,5)=Q$
4230 Q$=N$(CN,5):GOSUB2380:N$(CN,5)=Q$
4240 Q$=N$(CN,4):GOSUB2270:N$(CN,4)=Q$
4250 Q$=N$(CN,4):GOSUB2380:N$(CN,4)=Q$
4260 RETURN
4270 :
4280 :
4290 :
4300 REM*********************************
4310 REM******* SAVE DATA TO DISK *****
4320 REM*********************************
4330 GOSUB1900: PRINT"■              SAVE DATA TO DISK"
4340 PRINT"                  ──────────────────"
4350 PRINT"■■         PLACE DATA DISK IN DRIVE"
4360 PRINT"             THEN PRESS ENTER"
4370 GETZ$:IFZ$<>CHR$(13)THEN4370
4380 OPEN2,8,2,"@0:"+DA$+",S,W"
4390 GOSUB2130
4400 PRINT#2,V$;CR$;STR$(SO);CR$;STR$(CN);CR$;
4410 IFSO=0THEN4460
4420 I=1
4430 IFI>SOTHEN4460
4440 PRINT#2,SO$(I,0);CR$;SO$(I,1);CR$;SO$(I,2);CR$;SO$(I,3)
4450 I=I+1:GOTO4430
4460 I=1
4470 IFI>CNTHEN4510
4480 PRINT#2,N$(I,0);CR$;N$(I,1);CR$;N$(I,2);CR$;
4490 PRINT#2,N$(I,3);CR$;N$(I,4);CR$;N$(I,5)
4500 I=I+1:GOTO4470
4510 CLOSE2
4520 GOTO1570
4530 REM*********************************
4540 REM**** LOAD DATA FORM DISK ****
4550 REM*********************************
4560 :
4570 :
4580 PRINT"■■■■┌──────────────────────────────────────────────┐";
4590 PRINT"■■COMMODORE                                1541    ";
4600 PRINT"■■          ■┌──────────────────────────┐■■        ";
4610 PRINT"■■          ■■ LOAD DATA FROM DISK     ■■        ";
4620 PRINT"■■          ■└──────────────────────────┘■■        ";
4630 PRINT"■■                                                ";
```

```
4640 PRINT"■╲──────────────────────────────────────────────────────────────╱";
4650 PRINT"■■■         PLACE DATA DISK IN DRIVE"
4660 PRINT"              THEN PRESS ENTER"
4670 GETZ$:IFZ$<>CHR$(13)THEN4670
4680 PRINT"■■■╭──────────────────────────────────────────────────────────────╮";
4690 PRINT"■│  PRESS [F1] TO LIST DIRECTORY                                │";
4700 PRINT"■│  PRESS [F7] TO CONTINUE                                      │";
4710 PRINT"■╲──────────────────────────────────────────────────────────────╱";
4720 GETZ$:IFZ$=CHR$(133)THENGOSUB5870:GOTO4740
4730 IFZ$<>CHR$(136)THEN4720
4740 PRINT:PRINT"■■■■■■■■■■■ENTER FILE REQUIRED":INPUT"■■■■■■■■■■";MR$
4750 OPEN2,8,2,"0:"+MR$+",S,R"
4760 GOSUB2130
4770 INPUT#2,V$,SO$,CN$:SO=VAL(SO$):CN=VAL(CN$)
4780 IFSO=0THEN4830
4790 I=1
4800 IFI>SOTHEN4830
4810 INPUT#2,SO$(I,0),SO$(I,1),SO$(I,2),SO$(I,3)
4820 I=I+1:GOTO4800
4830 I=1
4840 IFI>CNTHEN4870
4850 INPUT#2,N$(I,0),N$(I,1),N$(I,2),N$(I,3),N$(I,4),N$(I,5)
4860 I=I+1:GOTO4840
4870 CLOSE2
4880 DL=1
4885 IFRF=1THENRF=0:RETURN
4890 GOTO1570
4900 CLOSE4:CLOSE2:CLOSE15:END
4910 :
4920 :
4930 REM**************************
4940 REM***SCREEN OR PRINTER*****
4950 REM**************************
4960 PRINT"■■■■╭──────────────────────────────────────────────────────────────╮"
4970 PRINT"■│    OUTPUT TO SCREEN OR PRINTER (S/P)│"
4980 PRINT"■╲──────────────────────────────────────────────────────────────╱"
4990 GETZ$:IFZ$=""THEN4990
5000 IFZ$="P"THENRETURN
5010 IFZ$<>"S"THEN4990
5020 PRINT"■■■╭──────────────────────────────────────────────────────────────╮"
5030 PRINT"■│  LIST STANDING ORDERS (Y/N)                                  │"
5040 PRINT"■╲──────────────────────────────────────────────────────────────╱"
5050 GETZ$:IFZ$="N"THEN5170
5060 IFZ$<>"Y"THEN5050
5070 FORR=1TOSO
5080 GOSUB2480
5090 SYSSY,1,9,"■■LIST STANDING ORDERS■"
5100 SYSSY,4,17,"";SO$(R,0)
5110 SYSSY,6,17,"";SO$(R,1)
5120 SYSSY,8,17,"";SO$(R,2)
5130 SYSSY,10,17,"";SO$(R,3)
5140 SYSSY,13,10,"PRESS ■RETURN■ TO CONTINUE"
5150 GETZ$:IFZ$<>CHR$(13)THEN5150
5160 NEXT
5170 PRINT"■"
5180 FORI=1TOCN:PRINT"■"
5190 PRINT"■■■■■■■■■■■■■STATMENT ENTRY NO";I
5200 PRINT:PRINT
5210 PRINT"PAYABLE TO",N$(I,0)
5220 PRINT"CHEQUE NO ",N$(I,1)
5230 PRINT"DATE      ",N$(I,2)
5240 PRINT"DEPOSIT   ",N$(I,3)
5250 PRINT"DEBIT     ",N$(I,4)
5260 PRINT"BALANCE   ",N$(I,5)
5270 PRINT"──────────────────────────────────────────────────────────────"
```

```
5280 PRINT"■■■■■■■■■PRESS ■RETURN■ TO CONTINUE"
5290 GETZ$:IFZ$<>CHR$(13)THEN5290
5300 NEXT
5310 GOTO1570
5320 REM ******************************
5330 REM ** PUT ST'S INTO STATEMENT **
5340 REM ******************************
5350 FORI=1TOSO
5360 PRINTI
5370 CN=CN+1
5380 N$(CN,0)=SO$(I,0)
5390 N$(CN,1)="S/ORDER"
5400 N$(CN,2)=SO$(I,1)
5410 N$(CN,3)=" "
5420 N$(CN,4)=SO$(I,3)
5430 N$(CN,5)=STR$(VAL(N$(CN-1,5))-VAL(SO$(I,3)))
5440 GOSUB4220
5450 NEXT:GOTO1570
5460 REM**********************
5470 REM** SEARCH BY NAME **
5480 REM**********************
5490 PRINT"■■■■■■■■■■■■■PLEASE ENTER NAME TO BE FOUND"
5500 PRINT"■■■■■■■";:INPUTN$
5510 PRINT"HARDCOPY (Y/N)"
5520 GETH$:IFH$=""THEN5520
5530 IFH$="Y"THENHC=1
5540 X=0:FORI=1TOCN
5550 IFN$=N$(I,0)THENX=I:GOSUB5620
5560 NEXT
5570 IFX>0THEN5610
5580 PRINT"■■■■■■■■■■■■■■■■■FILE NOT FOUND"
5590 PRINT"■■■■■■■■■PRESS RETURN TO CONTINUE"
5600 GETZ$:IFZ$<>CHR$(13)THEN5600
5610 HC=0:GOTO1570
5620 IFX>0ANDHC=1THENGOSUB6290:RETURN
5630 PRINT"■"
5640 PRINT"■■■■■■■■■■■■■■STATMENT ENTRY NO";I
5650 PRINT:PRINT
5660 PRINT"PAYABLE TO",N$(X,0)
5670 PRINT"CHEQUE NO ",N$(X,1)
5680 PRINT"DATE       ",N$(X,2)
5690 PRINT"DEPOSIT    ",N$(X,3)
5700 PRINT"DEBIT      ",N$(X,4)
5710 PRINT"BALANCE    ",N$(X,5)
5720 PRINT"————————————————————————————————————————"
5730 IFHC=1THEN65535
5740 PRINT"PRESS RETURN TO CONTINUE"
5750 GETZ$:IFZ$<>CHR$(13)THEN5750
5760 RETURN
5770 REM****** PRINT AT ********
5780 Q$=""
5790 SYSSY,Y,X,"* ";:SYSSY,Y,X,"";
5800 GETZ$:IFZ$=""THENSYSSY,Y,X,"  ";:GOTO5790
5810 IFZ$=CHR$(20)THENX=X-1:Q$=LEFT$(Q$,LEN(Q$)-1):GOTO5790
5820 IFZ$=CHR$(13)THENSYSSY,Y,X," ";:RETURN
5830 PRINTZ$;:X=X+1:Q$=Q$+Z$
5840 IFX>=38THENQ$=(LEFT$(Q$,LEN(Q$)-1)):RETURN
5850 GOTO5790
5860 REM***** GET DIRECTORY ******
5870 PRINT"■"
5880 PRINT"■     SEQUENTIAL FILES ON THIS DISK      "
5890 OPEN1,8,0,"$0"
5900 GET#1,A$,B$
5910 GET#1,A$,B$
5920 GET#1,A$,B$
```

```
5930 C=0
5940 IFA$<>""THENC=ASC(A$)
5950 IFB$<>""THENC=C+ASC(B$)*256
5960 GET#1,B$:IFST<>0GOTO6060
5970 IFB$<>CHR$(34)THEN5960
5980 G$=""
5990 GET#1,B$:IFB$<>CHR$(34)THENG$=G$+B$:GOTO5990
6000 GET#1,B$:IFB$=CHR$(32)THEN6000
6010 PRINTTAB(10);:C$=""
6020 C$=C$+B$:GET#1,B$:IFB$<>""THEN6020
6030 IFLEFT$(C$,3)<>"SEQ"THEN5910
6040 PRINT"■";G$
6050 IFST=0THEN5910
6060 CLOSE1
6070 RETURN
6080 REM**************************
6090 REM SEARCH BY CHEQUE NUMBER
6100 REM**************************
6110 PRINT"□"
6120 PRINT"■■■■■■■■SEARCH FILE BY CHEQUE NUMBER"
6130 PRINT"■■■■■■■■■■■■ENTER CHEQUE NUMBER TO BE FOUND"
6140 INPUT"■■■■■■■■■■■■■";CF$
6150 PRINT"■■■■■■■■■■■■■HARDCOPY (Y/N)"
6160 GETZ$:IFZ$=""THEN6160
6170 IFZ$="Y"THENHC=1
6180 X=0:FORI=1TOCN
6190 IFRIGHT$(N$(I,1),LEN(CF$))=CF$THENX=I
6200 NEXT
6210 IFX>0ANDHC=1THENGOSUB6290
6220 IFX>0ANDHC=0THENGOSUB5630
6230 IFX=0THEN6250
6240 HC=0:GOTO1570
6250 PRINT"■■■■■■■■■■■■■■FILE NOT FOUND"
6260 PRINT"■■■■■■■■■■■■■■PRESS ANY KEY TO CONTINUE"
6270 GETZ$:IFZ$=""THEN6270
6280 GOTO1570
6290 Q$=N$(X,3):GOSUB2370:N$(X,3)=Q$
6300 Q$=N$(X,4):GOSUB2370:N$(X,4)=Q$
6310 Q$=N$(X,5):GOSUB2370:N$(X,5)=Q$
6320 OPEN4,4
6330 PRINT#4,N$(X,0)CHR$(16)"20"N$(X,1)CHR$(16)"34"N$(X,2)CHR$(16)"46";
6340 PRINT#4,N$(X,3)CHR$(16)"60"N$(X,4)CHR$(16)"70"N$(X,5)
6350 CLOSE4
6360 RETURN
6370 PRINT"□"
6380 PRINT"■■■■■■■■SEARCH FILE BY CHEQUE DATE  "
6390 PRINT"■■■■■■■■■■■■■■■■ENTER DATE TO BE FOUND"
6400 INPUT"■■■■■■■■■■■■■■";CF$
6410 PRINT"■■■■■■■■■■■■■■HARDCOPY (Y/N)"
6420 GETZ$:IFZ$=""THEN6420
6430 IFZ$="Y"THENHC=1
6440 X=0:FORI=1TOCN
6450 IFRIGHT$(N$(I,2),LEN(CF$))=CF$THENX=I:GOSUB6490
6460 NEXT
6470 IFX=0THENGOTO6530
6480 HC=0:GOTO1570
6490 IFX>0ANDHC=1THENGOSUB6290
6500 IFX>0ANDHC=0THENGOSUB5630
6510 IFX=0THEN6530
6520 RETURN
6530 PRINT"■■■■■■■■■■■■■■FILE NOT FOUND"
6540 PRINT"■■■■■■■■■■■■■■PRESS ANY KEY TO CONTINUE"
6550 GETZ$:IFZ$=""THEN6550
6560 GOTO1570
READY.
```

Disable shift key

More useful hints, starting with a routine which disables shifted or CBM graphics characters. The routine sits in the Sprite 11 buffer and when initialised disables the shift key.

Disable shift pattern

The shift key is the only one disabled to start but with a single poke, any combination of shift/CBM/control keys can be disabled by POKEing to location 728:

254	Shift only	249	CBM & Control
253	CBM only	248	Shift & CBM & Control
251	Control only	255	None
252	Shift & CBM		
250	Shift & Control		

To disable the shift key, SYS704.
To re-enable SYS741 or POKE 728,255.

```
10 I=704:T=0
20 READA:IFA=-1THEN50
30 POKEI,A:I=I+1
40 T=T+A:GOTO20
50 IFT<>4222THENPRINT"■■CHECKSUM ERROR":END
60 IFI<>741THENPRINT"■■NUMBER OF VALUES ERROR":END
70 PRINT"■■SYS 704 TO ENABLE."
80 PRINT"■■SYS 728 TO DISABLE."
90 END
100 DATA120,169,205,141,143,2,169
110 DATA2,141,144,2,88,96,173
120 DATA141,2,41,254,141,141,2
130 DATA76,72,235,120,169,72,141
140 DATA143,2,169,235,141,144,2
150 DATA88,96,-1
READY.
```

Disk secrets

A couple of useful hints about using the Commodore disk drives. Firstly, thanks to Duncan Gamble of Romik software for the ideas.

Selective directories

It is known that when loading a disk directory you can ask for files that have some sort of pattern matching eg LOAD"$0:TEST*",8 will load in the directory only listing files that start with "TEST".

A useful directory command that is not widely known is the selective file types command which goes like this: LOAD"$*=P",8 which will only show PRG files. The other ones are $*=S (SEQ), $*=R (REL), and $*=U (USR).

```
READY.
■■■■

0 ■■■■
```

Locking Files

On the BBC computer, files can be locked so that they cannot be scratched or saved over unless unlocked. On Commodore disk drives files can be locked to prevent scratching (you can still save over them and then re-lock them).

This is done by setting bit 6 of the file type byte in the directory entry to a one.

Following is a Basic program that will lock a disk file. If you require unlocking it, just change line 840 to 840 V=ASC(FT$)AND191.

When a file has been locked, the directory will show a ' ' character after the file type as follows.

```
10 REM DISK FILE LOCKER BY R.FRANKLIN
20 REM JUNE 1984
30 REM
40 POKE53280,4:POKE53281,2
50 PRINT"■■■
```

```
410 P=0:GOSUB1130
420 REM
430 REM GET NEXT TRACK/SECTOR
440 REM
450 GOSUB980:T2$=A$:GOSUB980:S2$=A$
460 REM
470 REM 8 ENTRIES PER BLOCK
480 REM
490 FORI=0TO7
500 REM
510 REM GET FILE TYPE BYTE
520 REM
530 GOSUB980:FT$=A$
540 REM
550 REM IGNORE FILE POINTER
560 REM
570 GOSUB980:GOSUB980
580 REM
590 REM INPUT FILENAME
600 REM
610 NM$="":FORJ=0TO15:GOSUB980:NM$=NM$+A$:NEXT
620 REM
630 REM IGNORE REST OF ENTRY
640 REM
650 FORJ=0TO10:GOSUB980:NEXT
660 IFI<>7THENGOSUB980:GOSUB980
670 IFFL$=NM$THEN830
680 REM
690 REM NOT REQUIRED FILE
700 REM
710 PRINT"■FOUND:"NM$
720 NEXTI
730 T1$=T2$:S1$=S2$
740 REM
750 REM NEXT TRACK=0, END OF DIRECTORY
760 REM
770 IFT1$<>CHR$(0)THEN370
780 PRINT"■"FL$" NOT FOUND"
790 GOTO940
800 REM
810 REM FILE FOUND, LOCK IT
820 REM
830 P=I*32+2:GOSUB1130
840 V=ASC(FT$)OR64
850 PRINT#10,CHR$(V);
860 REM
870 REM WRITE BLOCK BACK
880 REM
890 GOSUB1080
900 PRINT"■"FL$" LOCKED"
910 REM
```

```
920 REM EXIT PROGRAM
930 REM
940 CLOSE10:CLOSE1:END
950 REM
960 REM GET A SINGLE BYTE FROM BUFFER
970 REM
980 GET#10,A$:IFA$=""THENA$=CHR$(0)
990 RETURN
1000 REM
1010 REM READ A BLOCK INTO BUFFER
1020 REM
1030 PRINT#1,"U1:10,0,"+STR$(DT)","+STR$(ASC(S1$))
1040 RETURN
1050 REM
1060 REM WRITE BUFFER TO DISK
1070 REM
1080 PRINT#1,"U2:10,0,"+STR$(DT)","+STR$(ASC(S1$))
1090 RETURN
1100 REM
1110 REM POSITION BUFFER POINTER
1120 REM
1130 PRINT#1,"B-P:10,"+STR$(P)
1140 RETURN
READY.
```


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Scope for design

Programmer Duncan Gamble casts a critical eye over Audiogenic's Magpie database and the 1541 Express from RAM Electronics, while Sally Wood looks at Scope, the games designer from ISP Marketing

SCOPE

"46 commands at the user's disposal."

Scope is a games designer for the 64, intended to overcome the problems involved in designing a brilliant and original game.

All good arcade games need bright attractive graphics and sprites, exciting sound effects, fast action and of course a detailed knowledge of Machine Code. Unfortunately this is often beyond the average programmers ability, thus creating a market for games designer programs such as Scope.

Scope, marketed and written by ISP, is short for Simple Compilation of Plain Language and is actually a compiler rather than a games designer. ISP have created the new language so that a programmer can type in instructions for a game program using simplified commands (much easier than in Machine Code). When completed, his game will be compiled into Machine Code and then run by means of SYS commands. The finished program will run very quickly because it has been written in Machine Code.

Unfortunately although the commands were sometimes similar to Basic, typing in the lines of a program sometimes became rather awkward and time consuming – every line number had to be followed by a REM statement, semi colons and colons which the following exert from one of their demonstration routines illustrates.

```
5 REM NOTE;ROUTINE TO DIVIDE (X/Y)
10 REM ORG;15500,20000:
20 REM LABEL;A:
30 REM DVAR;A,O:
40 REM VAR;X,7:
```

There are 46 commands at the programmers disposal and these are devoted to the creation of animated graphics, sprites, sounds, colour and music. Scope can only successfully be used to create arcade games because of its emphasis on moving graphics.

It is possible to write an entire program using Scope, but it does have its limitations. The new language used to write the programs seems to have been made so that it can easily be compiled and this is probably the reason it appears to be so primitive compared to Basic.

Despite its limitations, Scope may suit a programmer familiar with Basic who would like to have a go at producing some game sequences.

An added bonus for anyone buying Scope is free membership of the Scope users club. Each member receives a special card enabling him or her free access to a telephone 'hot line' intended to solve all your programming problems.

Product name:
Scope 64
Product:
Games Designer
Company:
ISP Marketing Ltd, Hampstead House, New Town Centre, Basingstoke, Hants. Tel: 01 351 5867
Hardware Requirement:
64, cassette recorder or disk drive
Applications:
Creating a game with graphics, sprites colours, sounds, music and animation
Documentation:
Detailed and comprehensive manual with tape demo routines
Price:
£17.95 on cassette and £18.95 on disk

1541 EXPRESS

– "increases data transfer speed, approximately doubling the transmission rate."

The 1541 single disk drive is a powerful intelligent unit. It is hampered by the speed of the serial bus used to communicate between the drive and the 64.

Serial transmission is inherently slower than parallel transmission of data because only one bit is transmitted at a time as opposed to one byte in 8-bit parallel transmission.

RAM Electronic's 1541 Express cartridge increases data transfer speed, approximately doubling the transmission rate.

In programs which require extensive disk access, the saving in time can be quite appreciable.

The cartridge also redefines the default filing device to disk rather than tape.

Shift/Runstop loads and runs the first program on the disk. Loading the directory can be abbreviated from 10"$",8 to just 10"$, loading a normal program from 10"filename",8 to just 10"filename.

Without the Express cartridge, typing commands on the keyboard while loading and saving is very unreliable and best avoided. With the express cartridge in its fast mode, the keyboard remains fully active and up to 10 characters can be typed in (the length of the keyboard queue).

Loading from and saving to disk is also possible with sprites on the screen.

The cartridge can work in its 'fast' mode or 'slow' mode – slow mode is the normal 1541 speed. While working in fast mode there are limitations on chaining on the serial bus: no extra drives or printers can be attached. In slow mode these limitations are relaxed but some printer interfaces on the serial bus can not be used with the cartridge plugged in at all. The manual mentions the CARD? interface.

Printers connected through the user port are not subject to any of these limitations, neither is the RS 232 interface.

In the manual for the Express cartridge a 'Fast cable' is mentioned which overcomes these restrictions.

The Express cartridge can be switched between fast and slow modes at any time except actually during disk-access, control and f1 or f3 switch to fast and slow mode respectively. This switching was found to be very well implemented. Even using various word-processors and assemblers, which totally take over the machine, the switching was still effective.

The cartridge port is used so no other software in plug-in cartridge form can be used concurrently.

Installation of the Express cartridge requires that the 64 is opened up and two leads from the cartridge be connected to chips on the PCB. These are attached to the CHAREN pin of the 6510 and the Address Enable Control line on U14 – the memory switching chip which controls ROM banking.

Opening up the 64 can void the warranty on it, so RAM Electronics suggest contacting a dealer if in any doubt over installation. This is worthwhile for anyone who is not certain over installation, as connection to the wrong pins could conceivably have very unpleasant results.

The leads end in small sprung clips, so no soldering is required. Once attached, riding eight miles with the 64 in a rucksack was not sufficient to dislodge the leads!

When the 64 powers up with the Express cartridge inserted, the line 'WITH 1541 EXPRESS' appears in white in addition to the usual power-up message. It is at this point that the reason for the two leads becomes obvious. RAM Electronics have cleverly found a way of adding in extra ROM without lessening the available user RAM.

Express uses one of the five buffers in the disk drive in fast mode, two are used by the DOS, leaving only two free for files. Because relative files use two buffers and sequential files one buffer, only one relative file or two sequential files are available at one time.

Because of this use of an extra disk buffer in fast mode, some programs using several files or all three buffers normally available will only work in slow mode: Lode Runner will not work in fast mode, but Jumpman and Infocom adventures will.

Trial and error is the only way of determining whether a piece of software will work normally. If you are using primarily one software package it is worth checking if Express works with it before investing in this cartridge.

MAGPIE

"Magpie's own language resembles Pascal and Cobol, but is very much simpler."

The Magpie database, from Audiogenic, comes in the form of a cartridge and a disk with a well-written manual in a tough ring-bound cover.

Databases allow the efficient storage sorting and retrieval of information, but every user's needs are different so the database must be flexible.

Magpie approaches the problem of flexibility as a language in which the user designs his own databases.

On switching on, after queries as to disk drive and printer type, the user is confronted by a menu of options. Magpie menus are displayed as options in blocks on the screen with the cursor as a line of the menu in reverse field.

When an option is selected which points to another menu, this is displayed overlapping the first menu. It is possible to retrace one's steps as there is always part of the previous menu visible.

Menus are displayed in various colours of varying legibility – white writing on a medium grey background required much tweaking of the colour and contrast controls, even on a colour monitor, to be read.

In the first menu are options to run procedures, use Magpie's calculator and create and use systems stored on disk.

The calculator mode provides a very simple calculator, 26 variables a-z are displayed and used in expressions.

Evaluation of expressions is left to right, and only add, subtract, multiply and divide can be used.

The manual at this point says that the system is very forgiving, but I found that any mistakes or attempts to use functions not supported resulted in the variable being calculated set to zero and no error message being generated. Attempting to find the value of three raised to the power of four gave a result of zero!

Magpie comes with a disk on which are help screens and an example Magpie application.

The help screens are also found in the manual. They can be called from disk at any time without disrupting operation of Magpie.

There are help screens for most Magpie functions but they are usually rewordings of sections of the manual, not always containing the information needed by someone in trouble.

The language that Magpie uses has two fundamental units – the form and the logic to control the forms. Forms are designed on screen. First headings are set up, then fields are associated with headings. Forms can be much larger than the 64 screen, a maximum size of 80 columns by 76 rows approximates to a sheet of A4 paper. The screen scrolls left and right and up and down.

Headings are just typed in at the place on the form required on screen, using the normal 64 cursor controls. When headings have been set up, fields are entered. Up to 26 numeric and 26 alphanumeric fields can be used on a single form and these can be as long as will fit on the form.

As many forms as will fit in memory can be used, with two active at any one time.

Forms are the screen display format of data entry and display. How they are used is controlled by the program written in Magpie's own language. This is a high level language bearing resemblances to Pascal and Cobol in its structuring, but very much simpler.

Magpie builds its main menus from procedure names. Further menus are built from sub-procedures called from within the main procedures. One limitation of these is that they must be defined before the calling procedure in the text. Magpie cannot look ahead for sub-procedures.

The language has commands for assigning any form in memory to be one of the two current forms that can be in use, allowing many forms to be used within an application.

The language has very high level single commands for inputting to all fields in a form, setting up files on disk and updating files.

Repeat/until loop structures are also available, as are powerful disk handling commands for using several drives and devices.

Most commands when writing a Magpie program are entered by finding the command in one of the menus of lists in the Magpie system. Although Magpie has the facility to allow entering text normally for a program, it will not recognise commands typed in in this way.

Its 'enter text' mode is used only for names, messages and certain variable instructions.

Passwords can be requested at any time from the user of an application. A password is entered when an application is created as an overall password, different passwords can then be used to protect sensitive areas of the application.

Magpie has commands for plotting graphs – bar graphs can be plotted horizontally or vertically or points plotted. The graphs are only low resolution character blocks limiting point resolution.

In Magpie, forms for graphs are resident in the system itself so they can be called without having to be defined by the user.

When hard copy is required the printer usually prints exactly what is on the form. Some printers, however, use control codes for underlined or bold text. These are entered when creating a form and are not seen on the screen version.

When using a centronics printer connected through the user port I found it possible to hang Magpie, by switching off the printer, until it was switched on again and printing resumed. If no printer was connected then the only way to regain control was by switching off then on again. Though Magpie's manual does give a warning on this, a timeout or abort printing facility would have been vastly preferable.

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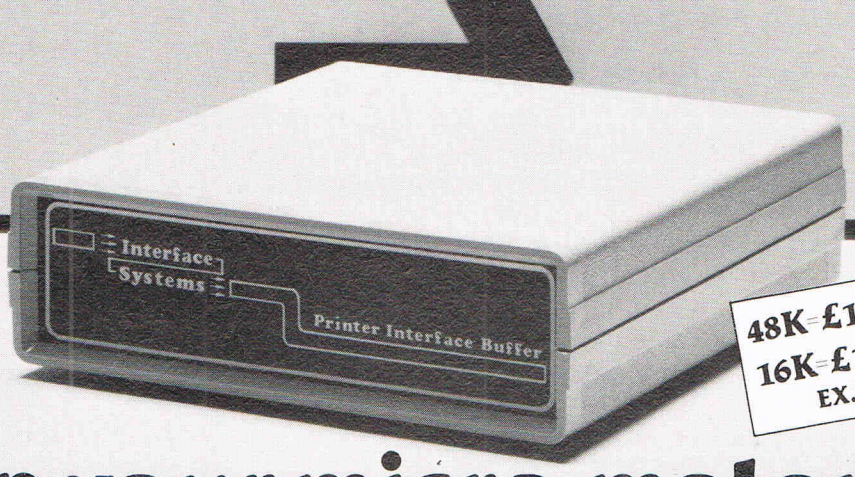

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Takeover

Wordcraft Systems, formerly of 43, Farley Road, Derby, has amalgamated with Dataview Ltd and is now known as Dataview Wordcraft Ltd.

The new company will take over Dataview's software publishing interests and will control the marketing of Wordcraft, a word processing system compatible with both the 64 and the portable SX-64.

One of the Wordcraft Systems' most notable past success was the invention and design of the Dongle protection system," which first saw commercial light linked to Wordcraft," said Paul Handover, Managing Director of the new company.

The company will operate from two locations – Colchester and Derby.

Contact: Dataview Wordcraft Ltd, Portreaves House, East Bay, Colchester, Essex. Tel: 0206 869414.

On line

British Rail are now storing a lot of their information using Apstor's (formerly APS Microsystems) Alpha 10, a removable cartridge disk system.

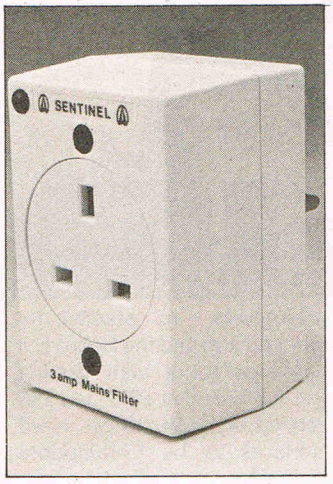
Their first order included five Alpha 10's in a 40 Mbyte configuration which are installed in five separate depots to control parts and schedules.

The disk system combines the qualities of hard disks and floppies with a large memory for data. There are three systems altogether; the Alpha 10 which gives 20 Mbytes of storage, the Beta 5 with 10 Mbytes and the Gamma 20 with 40 Mbytes. They are all compatible with both the Commodore 8000 and 700 series.

Apstors other customers include Borsumij Data Systems, a Dutch company, Courtaulds, Lucas and the Woolwich Building Society.

Contact: Apstor Ltd, Unit 5, Victoria Road Trading Estate, Portslade, Brighton, Sussex. Tel: 0273 422512.

Power on



To combat the problems caused to computer installations by fluctuating mains supply, ACS have introduced a mains filter/surge protector, approved by British Telecom.

This device incorporates a solid-state filter and transient processor and resembles a standard 3-pin mains adaptor. The Commodore compatible 3-amp version retailing at £33 fits in between the mains socket and the computer plus.

Contact: Associated Computer Supplies, Bowmaker House, Etruria Road, Hanley, Stoke-on-Trent. Tel: 0782 287121.

Printer match

Omnitronix have developed two interfaces which will link the 64 and VIC-20 to both Parallel and Serial printers and enable them to print out Commodore and Control characters.

The Parallel printer interface converts CBM ASCII to standard ASCII and two keyboard or software selectable printing modes are available.

In mode one, upper/lower case characters can be printed as graphics with control and graphic characters represented as words and numbers.

Mode two will print upper/lower case characters with control and graphic characters printed as they are. In both modes, the entire Commodore graphics set can be printed.

The Parallel Printer Driver disk or cassette accompanying the Interface has to be configured to the correct printer brand before it will print graphics.

Similarly the Printer driver for Serial RS232 printers will enable Commodore graphics and control characters to be printed. It has the same functions as the Parallel driver.

To print actual graphics, a dot matrix printer with bit map graphics capabilities and the right printer configuration will be necessary.

Both Parallel and Serial interfaces cost $39.95 (£27) + $1.60 (£1) p&p each.

Contact: Omnitronix, PO Box 43, Mercer Island, Washington 98040, USA. Tel: 206 236 2983.

Software registry

Have you lost thousands of pounds of software sales through piracy? A Software Registry scheme has been set-up by TSR, a private company offering legal protection.

If your software is admitted to the scheme, £75 entitles you to five year registration period. You automatically join a copyright legal expenses assurance scheme which provides you with financial assistance to pursue an infringer.

Immediate advantages include a date verification and administration system to assist with establishing and maintaining your software copyright.

Contact: Software Registry Ltd, 57a Lincoln's Inn Fields, London WC2. Tel: 01 430 0798.

Reduce glare

Cave & Tab, manufacturers of two polaroid filters, the CP-70 and the CP-50 costing £105 and £49.50 respectively, are now offering a free guide to help people choose the right filter for their screen.

Anti-glare filters are also available from Romag. Their laminated filters reduce screen reflections and are currently retailing for under £20.

Contacts: Cave & Tab Ltd, 5 Tenter Road, Moulton Park, Northampton. Tel: 0604 47238 and Romag, Patterson Street, Blaydon on Tyne, Tyne & Wear. Tel: 091 414 5511.

Utilise space

VDU terminals arranged on desks can reduce available space, so Eldon have brought out a tray to combat this problem.

The Eldon CRT tray has non-slip hooks and rubber feet which secure it to the top of a terminal leaving enough ventilation space for the computer. These trays can be stacked and the two sizes available, A4 and A3 retail at £11.30 and £12.80 respectively.

Contact: Eldon Office Products (Europe), Unit 3, Clifton Road, Shefford, Bedfordshire.

Maxtech

A range of Winchester disk drives with memory capacities ranging from 70 Mbytes to 1200 Mbytes for the whole range of Commodore computers, including the 8032, 64 and VIC-20, are now available from Maxtech.

Versions for the 16 and Plus/4 are currently being developed. Models vary according to the computer they are connected to, although conversion kits are available for any user who upgrades a processor from one computer to another.

A streaming-tape backup unit can be bought as an optional extra.

Contact: Maxtech Inc, Box 3662, Regina, Canada S4F 3N8.

PRODUCT NEWS

Dr Disk

If Mermaid Software's Doctadisk, a disk repair program, carries out all the functions they claim it does, the frustration and anger caused by corrupt disks will no longer be necessary.

Doctadisk operates with Commodore 1541 disk drives and all D4 format drives. Mermaid say that it can retrieve corrupted data from old, dented or scratched disks, transfer repaired data to a new disk, reformat the new disk, show track and sectors while reading the data, enable the disk to be reused if not physically damaged and will give a security backup of most disks.

Doctadisk is available on disk for £15.95 including p&p.

Contact: Mermaid Software, 27 Buckingham Gardens, Edgeware, Middlesex. Tel: 01 951 3355.

Tutor

New Generation have made their debut in the software market with The Complete Machine Code Tutor, a program intended to give the Basic programmer a step by step guide to Machine Code.

The package comes with two cassettes containing lessons and exercises and costs £14.95.

A reference manual accompanies the program and a simulator routine takes the user through all aspects of the program before starting the lessons.

Contact: New Generation Software, The Brooklands, 15 Sunnybank, Lyncombe Vale, Bath.

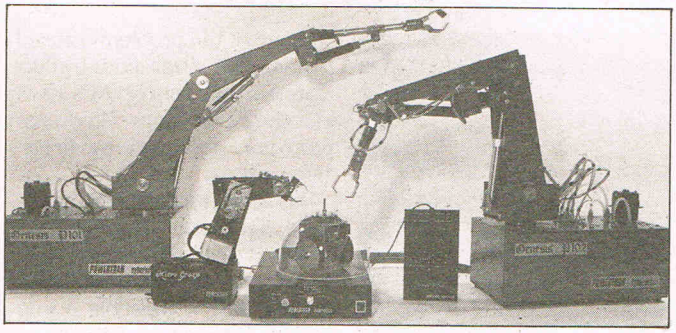
Crystal Zeus

The Zeus Assembler for the 64 from Crystal Computing is now available on cassette for £9.95.

Zeus will include features such as single stroke commands, full screen editors, automatic line numbering and re-numbering.

Contact: Crystal Computing, 125 Smedley Road, Cheetham Hill, Manchester M8. Tel: 061 205 6603.

Gripping



Powertran specialise in providing robotic systems which can be preprogrammed and modified to suit individual projects.

At the top end of the range the Genesis P102, which costs £1,476, features a hydraulically powered revolution arm, two-speed operation, a microprocessor and control box rendering the system totally independent and transportable.

The two other robots, the Micrograsp, an electrically operated arm and the Hebot II, a turtle-type robot with flashing eyes are priced at £272 and £95 respectively. All three need interfaces to be Commodore compatible.

They are available in kit form with assembly instructions and programming tips.

Contact: Powertran Cybernatics Ltd, Portway Industrial Estate, Andover, Hants. Tel: 0264 64455.

Knowledge

Knowledge Index, a cheap, powerful and comprehensive information retrieval service has been set up by Dialog Information Services.

The service is already in operation in the USA and has over 5,000 subscribers including Doctors, librarians, teachers and engineers.

Dr Roger Summit, President of Knowledge Index believes that there is a market in Britain for this type of service because although vast amounts of information exist, "it is very hard to find when you need it!". the purpose of Information Index being to make information easily accessible.

Over 20 databases with 21 million separate items covering journals, books, software packages and government reports are incorporated into the system and topics covered include medicine, agriculture, education, business, computers and electronics.

Dialog claim that the service is fast, powerful and simple to use because it uses simple command processors and doesn't require programming.

A joining fee of £25 entitles the user to two hours free use and thereafter the connect time, which costs £17 an hour, is the only expense. An average search costs from 35p to £2. The service is only available from 6pm to 5am on Sunday to Friday and from 2pm to 5am on Saturdays.

To use the service, subscribers will need a terminal, word processor with a communications option, telecommunications software, a modem and an RS232C interface for the PET, 64 or VIC-20.

Contact: Dialog Information Services, PO Box 8, Abingdon, Oxford. Tel: 0865 730969.

Interface

Syscon 6, an interface enabling Commodore peripherals to be used with the BBC micro, could save many educational and government institutions a lot of money as it eliminates the need for new drives and printers. The interface retails at £156+vat.

The 2040, 3040, 4040 and 8050 dual disk drive units can be used as well as the 2022, 2023, 3022, 3023, 4022 and some other Commodore printers.

The Syscon 6 connects to the peripherals via an IEEE488 interface and a manual is supplied with each interface.

Contact: Intelligent Interfaces, 43B Wood Street, Stratford-on-Avon, Warwickshire. Tel: 0789 296879.

Microsound

Microsound, manufacturers of a 64 key board, will be adding a Digital Music System to their range in October.

This system can record any sound via a microphone and store it in digital form for use with a keyboard as a sound source or for synthesizing.

The package costs about £200 and consists of a piece of hardware with a programmable low-pass filter, input amplifier and a cartridge expansion port connector and software. Sound is stored in 30K of RAM and samples and waveforms can be stored on disk or cassette. The keyboard is not included in the package.

Contact: Autographics Ltd, 3a Reading Road, Henley-on-Thames, Oxon. Tel: 0491 575469.

You Jane

Jane, an integrated software package, is scheduled by Softsel to be available for the 64 in September and will cost £125.30. With the Mouse, an optional extra, the package will cost £206.50.

The three application modules included in the package – Janewrite, the wordprocessor; Janecalc, the spreadsheet and calculator; and Janelist, the file manager and personal filing system, can be used either separately or together.

Contact: Softsel Computer Products, Softsel House, Central Way, Feltham, Middlesex. Tel: 01 844 2040.

PRODUCT NEWS

Crash repairs

The Super T Plus for the 64 and VIC-20 can restore most reset and crashed programs and reinitialises the 1541 disk drive for $20 (£14).

It is mounted as an extension to the 1541 cable and is attached to the Serial port. Anyone already in possession of The Teser, Super Teser and Teser Mk I, can return these with $5 (£3.57) for a newer version.

Contact: Poseidon International Ltd, 103 Waverly Place, New York 10011. Tel: 212 777 9515.

RAD range

RAD systems are now producing software for the 64 and have a number of titles aimed at both home users and small to medium businesses.

Mailshot 64, an address management system with labels and Flexi-Base 64, a data base program are available on disk or tape for £19.95 and £16.95 respectively. Super-Diary 64, Recipe-Book 64 and Enterprise 64 – an accounting system, all retail at £15.95 for disk and £12.95 for cassette versions.

Manuals accompany all the programs and RAD Systems will explain all their products to potential customers.

Contact: RAD Systems, 17 Devonshire Hill Lane, London N17. Tel: 01 801 5132.

Pixel Pad

Pixel Pads from Peter Bamford are intended to take the hard work out of designing computer graphics.

Each Pad contains a ready made grid together with a summary of graphic programming instructions. In addition to the 8 x 8 user defined grids there are sprite grids and 50 sheets of paper. They retail at £4.95 + £1 p&p.

Contact: Peter Bamford & Co, 10 Barley Mow Passage, Chiswick, London W4. Tel: 01 994 6477.

Sales aid

Selling and promoting goods by technological means is beocming more popular. With Microlex, a software package from Talent Computer Systems, anyone with a 64 will be able to display coloured text with animation and flashing letters on strategically placed monitors.

Talent emphasize that the two main selling points for Microlex are its flexibility and low cost. The complete package costs £275 on disk or cassette, but it can be hired with hardware for about £3 a week.

The display screens can be linked together to form a continuous visual display and the user can compose or edit frames as they are needed. The program is menu-driven and includes a number of features – 16 background and text colours, varied typefaces, characters, symbols and logos and the capacity to hold 60 frames for use in any sequence.

Microlex can drive at least ten monitors and, with boosters, the potential is much more. Talent hope to attract the custom of Retail Stores, Exhibitions, Hotels and House Builders.

Contact: Telent Computer Systems, Curran Building, 101 St James Road, Glasgow. Tel: 041 552 2128.

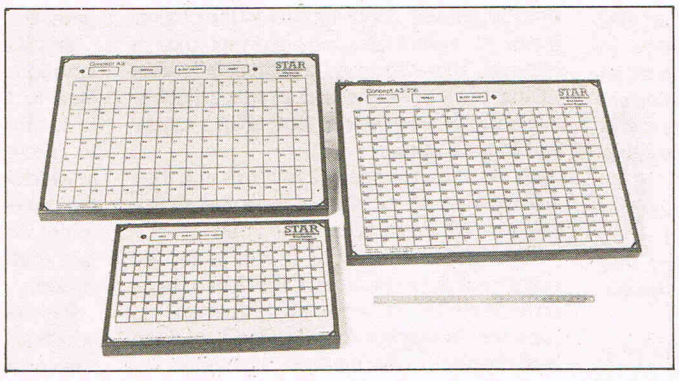
New HQ

Atlantic Software, a UK software supplier specialising in Word Processing and mailing list programs for the VIC-20, have moved to new premises.

The new address is 28 Park Farm Road, Kingston-upon-Thames, Surrey.

Atlantic also provides information on a range of tape and disk-based programs for the unexpanded and expanded VIC-20 plus those for use with the parallel and series interface printers.

Keyboard choice



Concept are offering an alternative to the Commodore keyboard systems – their own input device.

The keyboard offers flexibility to any programmer as any shape, object, word or character can be stuck on the keyboard overlay and assigned to a fixed code.

The pad is covered in touch sensitive cells and three keyboard versions are available. The A4 unit measures 227 x 315 x 25mm, has 16 x 8 matrix with 128 touch cells and two A3 units measure 315 x 435 x 25mm.

The A3-128 has a 16 x 8 matrix with 128 touch cells and the A3-256 is fitted with a 16 x 16 matrix with 256 touch cells.

The keyboard operates with specially written software but at present, educational programs are the only ones available for the PET, 64 and VIC-20, although competent programmers can write their own. A4 pads and A3-256 pads cost £69 and £149 respectively.

Contact: Star Microterminals Ltd, 22 Hyde Street, Winchester, Hampshire. Tel: 0962 51422.

Harness your 64

"Commodore 64 Sound and Graphics" by Peter Falconer, retailing at £6.95 and published by Melbourne House, will suit both the naive and experienced programmer interested in learning more about these subjects.

The book starts with explanations of what the 64's Sound and Graphic capabilities are and then the design and coding of a game are introduced with respect to these two features. Finally machine code routines such as scrolling, a Raster interrupt scheduler and a music routine are shown.

Melbourne House claim that the book will help readers unfamiliar with machine code to gain some competence in "harnessing its power".

Contact: Melbourne House, Castle Yard House, Castle Yard, Richmond. Tel: 01 940 6064.

Wafadrive

Rotronics plan to launch Wafadrive, a new type of storage system, by the end of this year.

Wafadrive will be compatible with the 64, VIC-20 and the new Commodore machines – the 16 and Plus/4 and will retail at £159.95. It features two fast tape drives, each with a 128K storage capacity and will have the same data integrity and performance as a floppy disk.

One wafer or cartridge will be included with the package. There will be three sizes available – 128K, 64K and 16K, priced at £3.95, £3.65 and £3.45 respectively. The smaller wafers sacrifice storage capacity for speed of operation.

Both Centronic and RS232C outputs are included on the Wafadrive as well as a word processing program, although this is only for the 64.

Contact: Rotronics Ltd, Santosh House, Marlborough Trading Estate, West Wycombe Road, High Wycombe, Bucks. Tel: 0494 452757.

64 is good for Guy's

Sue Pearce is admitted to Guy's Hospital, not for major surgery but to discover how the 64 is being used to determine paternity in law suits!

Scientists are reputedly compulsive computer games players and Ian Bradbrook is no exception. Ian, a Lecturer in Forensic Serology (blood), works in the Department of Forensic Medicine at Guy's Hospital. His experience with computers led him to believe that a computer would be extremely useful in storing the masses of data generated in his work.

Guy's Forensic Medicine Department is one of the official Home Office blood testers, carrying out tests to determine paternity in law suits. By law, the court must order blood tests of all parties in affiliation. The court gets in touch with one of the official testers to arrange for blood samples to be taken either at Guy's or at a local GP. Blood samples are then examined to see if there are any exclusions, ie Mr X could not possibly be the father of the child.

If there are any exclusions tests are repeated, preferably with fresh blood.

The results are sent back to the court who then decide whether to accept the probability of Mr Y being the father.

Whereas it is possible to determine who isn't the father, blood tests can only prove that someone belongs to the corresponding blood group – along with X per cent of the population.

Here the computer is invaluable in storing large amounts of information.

The Department of Forensic Medicine originally had a Sharp computer for which Ian wrote his own Basic program. When the 64 was launched Ian converted the program to run on the 64, a decision he has never had cause to regret.

Last year Ian attended the International Commodore Show where Precision Software launched Superbase, a database which was ideal for his needs.

Mounds of paperwork are generated every day. A day-book lists types of tests and people being tested. Information is then transferred to day-sheets which list names of people and which tests they are undergoing. At the end of each week, Ian copies the data onto Superbase, checking back to the original notes to ensure that no incorrect data is entered. This system is not particularly time saving, but it does save a lot of space. Four or five floppies are easier to store than a mountain of loose paper.

Ian prints his reports out as forms and they are then typed onto special Home Office forms which are acceptable in court.

Another advantage of a computerised system is that if a solicitor should ring to check on information, the retrieval of information is substantially quicker. All data is entered along with the date making it easily accessible.

Ian has written a simple program to calculate the frequency of any particular blood group. No longer is it necessary to resort to logarithm tables to determine how many people in the population have a certain blood group. Ian just keys in the blood group and the 64 comes up with the answer.

Superbase is especially useful in the event of a case which has finished with no exclusion and when a second man is cited. Or there are cases with up to four men involved.

Another example where it helps to collate information quickly and accurately is when there is a great deal of money at stake as in the case of inheritance where illegitimate children now hold the same rights.

There are around 90,000 illegitimate births a year in this country – one in every six babies born is illegitimate. Guy's Hospital handle 500 of these cases, a quarter of all in the country. Most cases are now settled out of court.

The Department of Forensic Medicine deals with people from all walks of life. From the famous pop stars (no names mentioned of course!) to the poor 16-year-old girls who discover that they need to know the name of their child's father before they can claim supplementary benefit and have to think back to who they were sleeping with at the time.

Ian's 64 also helps him cope with the laborious task of form filling and letter writing. Due to the nature of these Ian prefers to tackle the task himself rather than handing it to a secretary. He uses Easy Script for the ease in which he can edit a letter. It is often the case that when Ian sees it in writing he gets a different view of the case, sometimes noticing a fact that may have previously been overlooked.

This information is then stored on disk which also saves a lot of office space.

Ian's department also helps the Metropolitan Police with murder investigations, matching blood types and analysing samples. Again the computer speeds up calculations of the percentage of the population with the same blood group.

At present Ian's colleagues are still doing their part of the work manually, but he hopes to eventually put everything on Superbase and buy a daisy-wheel printer for letter quality print outs.

Ian assured us that any data built up over the years which is subsequently used in calculations of the frequencies of blood groups in England is all completely anonymous and that there is no Big Brother syndrome at Guy's Hospital!

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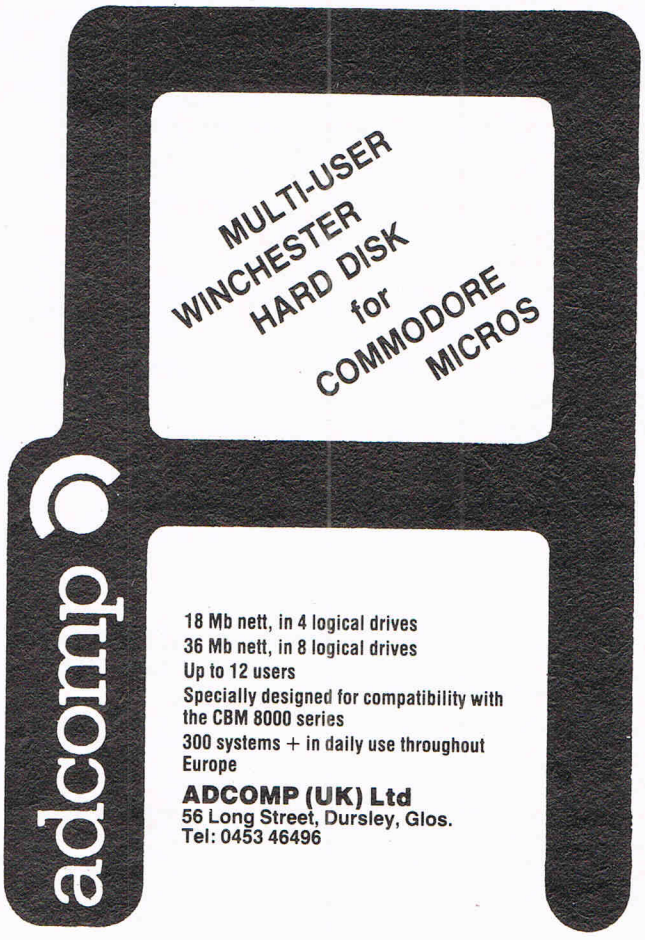

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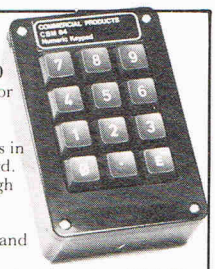

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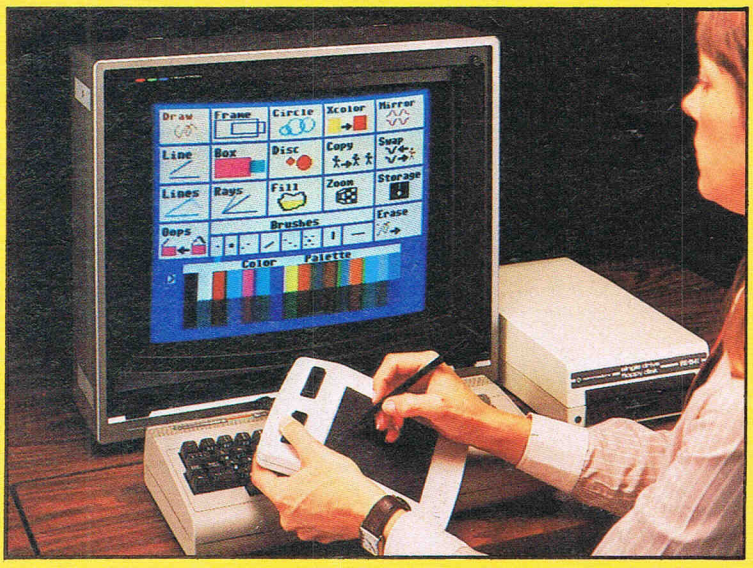

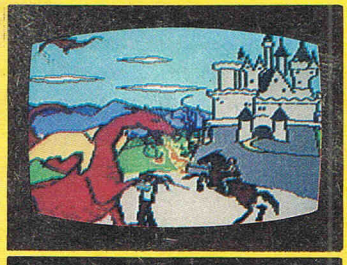

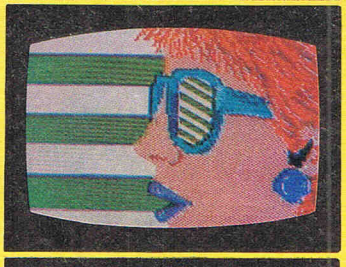

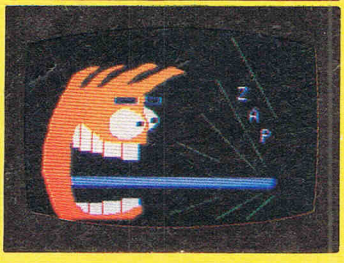

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